My GARDENER

A Practical Handbook

For the Million

By

H. W. WARD

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MY GARDENER:

A Practical Pandbook for the Million.

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PREFACE TO SECOND EDITION.

The first edition of "My Gardener" being exhausted, I therefore gladly embrace the opportunity afforded me, in revising the work for the present issue, to express my grateful acknowledgments of the favourable manner in which the first edition of "My Gardener" has been referred to by the metropolitan and provincial press. I also beg to thank the many correspondents for the kind remarks which they addressed to me respecting the work.

In the present issue suggestions kindly made by eminent trade horticulturists have received due attention, and fresh articles have been added to the work.

February 1900.

H. W. W.

MY GARDENER:

A PRACTICAL HANDBOOK FOR THE MILLION.

INTRODUCTORY.

WING to the fact of my having had a practical and intimate acquaintanceship of many years' standing with the management of Cottage Garden Show Societies, including the inspection of the kitchen gardens, garden fronts and allotments belonging to the individual cottages situated in the several parishes included in the area of the respective societies, and subsequently judging the produce from same in the exhibition tents, I have become thoroughly acquainted with the people's lack of cultural skill on the one hand, and their willingness to learn on the other; and as the result of verbal instructions given to my industrious friends on such occasions, as to the best and most profitable kinds and varieties of vegetables, fruits and flowers to grow, together with practical hints on their culture and the setting up of their produce to the best advantage on the exhibition tables, I annually have the satisfaction of seeing the good use they have made of the cultural knowledge thus acquired. I may say here that all the varieties of peas, potatoes and other kinds of vegetables recommended in this work have been found to be quite as suitable and profitable for growing in cottage gardens and allotments as they prove to be for gentlemen's gardens. It is quite an erroneous idea to suppose that garden standard varieties are not suitable for the poor man's garden and allotment.

The turning to such good account of the brief and hastily-furnished information indicated above has, in connection with appeals from correspondents, suggested to my mind the idea of writing "MY GARDENER." And in this work I shall endeavour to treat the cultural details in as practical, simple, and brief a manner as possible consistent with making

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my meaning clear, so that the instructions therein given may come within the comprehension of all classes and ages, from school children ipwards, who may consult its pages.

The success attending the acquirement of a better knowledge of the cultivation of vegetables, bush fruits and strawberries during the last twenty years, has, from a commercial as well as a cultural point of view, reached a position little thought of a few years ago. The business of the market gardener as a paying concern is annually increasing in importance and extent. As a proof of this assertion I need only say that nearly all the cultivated land within a measurable distance of our large towns is devoted to the production of fresh, wholesome vegetables and small fruits, to supply the requirements of the inhabitants in this respect with nutritious and healthy food—the ground within the circumscribed space being much too valuable for cropping with agricultural produce. And I doubt not that as time goes on the area now occupied with vegetable plants and fruit trees will be still greatly extended.

The passing of the Allotment Holdings Act in 1887 has been productive of much good in providing means by which habits of industry, self-help, and temperance have been and are still being greatly promoted among the people. It must be a source of great pleasure and satisfaction to the promoters of that Bill, as it is to millions of people throughout the country, to witness during the spring, summer, and early autumn evenings the allotment holders throughout the country busily engaged in the sowing, planting and cultivation of their crops, the men being frequently assisted in the remunerative and healthy employment by their children, who thus acquire an early love and knowledge of the cultivation of vegetables, ordinary fruits and flowers. Evenings so profitably spent by men, women and children in studying the habits and administrating to the requirements of Nature's produce-vegetable plants, fruit-trees and flowers-have an elevating and refining influence upon the people at large. Since the passing of the above beneficial Act, industrious cottagers and artisans not only grow sufficient wholesome vegetables and small fruits for themselves and families, but frequently dispose of surplus produce in the nearest market town, sufficient to defray cost of seed, labour and rent. satisfactory state of things will continue to improve in proportion to the attainment of cultural knowledge acquired by the millions from practically-written and easily-understood books and papers on

gardening, the theory of which might, with considerable advantage to the community at large, be taught in elementary schools.

In every well-thought-out scheme or branch of industry the details connected therewith are governed by general principles or lines upon which the whole machinery is regulated to run as smoothly and successfully as possible.

In the matter of gardening, as well as farming, success, apart from the possession of cultural skill and perseverance on the part of those engaged in the work, depends in a great measure upon the character of the climate, situation, and nature of the soil. In the matter of climate, of course, people living in the southern and western parts of the country, or county, are more favourably situated as regards growth and ripening of crops than those residing in other portions of it are. And in some cases people residing in the same village are more favourably situated in the matter of soil and situation than their neighbours are. They are, therefore, sure to secure earlier and later supplies of vegetables, as well as earlier gatherings of strawberries and bush fruits, than can be obtained by their less fortunate, though equally skilful and painstaking, neighbours.

A light, yellow loam, from 15 to 30 in. deep, resting upon a limestone or gravelly subsoil, sloping to the south or west and partly protected from the north and east, is alike favourable to the growth of all kinds of vegetables, fruits and flowers generally, fertilisers being applied when considered necessary. However, during dry, hot seasons, not only better crops are obtained from a deep loam inclining to be heavy rather than light, but such plants as peas, beans, cauliflowers, strawberries and bush fruits—that is, gooseberries, raspberries and currants—continue longer in bearing, on account of the moist nature of the soil, than would be the case in loam of a lighter texture. But the latter description of soil, taking the weather one year with another, is not only more easily worked, but also yields more satisfactory crops.

In this work I will indicate the best kinds and varieties of vegetables and hardy fruits and flowers to grow, and how to grow them. I will give the botanical name of each vegetable plant in parentheses underneath each sort of plant mentioned, treating them alphabetically. I also intend giving in "My Gardener" series of paragraphs indicating the manner in which the most ordinary kind of garden and allotment work should be done, for no matter however simple any kind of work may be, there is always a right and a wrong way of doing

it. Moreover, it is by the mastering of small details that great results are achieved.

Trusting that the feelings which have led to my writing "MY GARDENER"—namely, the promoting of a better knowledge of gardening among the people—may be realised.

H. W. W.

September 1891.

THE CULTURE OF VEGETABLES.

ARTICHOKE.

(Cynara scolymus.)

This is a hardy perennial plant, a native of Barbary and the south of Europe. It is cultivated for the immature flower heads, of which the base of the leaf, or scale, and the fleshy receptacle are the parts used.

The soil which the artichoke prefers is a deep, free soil, such as a sandy loam, and an open situation. The ground in which it is intended to be grown should be liberally manured and trenched at least 2 ft. deep, mixing the manure with the soil in the process of trenching. If the natural soil should be of a heavy, clayey nature, it would be advisable to open a few trenches at 3 ft. from centre to centre, 2 ft. wide, and the same depth, some time between October and January, and fill them with a mixture of dung and mould preparatory to setting the plants therein in the spring.

Propagation and Planting.—The plant is propagated by suckers, which spring freely from the old stools or plants towards the end of March or early in April. Usually from six to twelve suckers are produced by each plant. As soon as the leaves of these have attained a length of 8 or 9 in., two or three of those (round the outside of stools) having the greatest number of suckers should be taken off, with a few root-fibres attached. These offsets should then be planted with a garden trowel in clumps of three plants, each set triangularly 7 or 8 in. from plant to plant. These clumps are made 3 ft. apart between the rows, and at the same distance from clump to clump in the row. In planting, make the soil firm about each plant with the hands, after which, in the absence of rain, they should be watered to settle the soil about the roots, repeating the application at intervals of three or four days until the roots have taken to the soil and the plants begin They should be planted about 4 in. deep, after which the ground between the rows and plants should be forked over and a surface-dressing of manure, of the thickness of 3 in., should be laid on These plants will yield a good supply of artichokes in the autumn, and long after those planted a year or two previously have ceased to bear. It is, therefore, a good plan to destroy a row or two of old plants every year, and to plant an equal number of rows of young The offset, or sucker plants, may also be used for making good any vacancies that may have been occasioned amongst the established plantations during the winter. In the southern parts of the kingdom artichokes will be fit to cut during ordinary seasons the last week in June or the first week in July, and in the northern parts ten or fifteen days later. The heads should be cut before the crown or top leaves show signs of parting, before they push into flower, otherwise they will be unfit for use.

After Treatment.—Keep the beds free from weeds during the summer and autumn. As soon as the crop from each of the flower-stems is taken they should be cut down, and all dead leaves should be removed at the same time. Before frost sets in—say, some time in November—a good thickness of stable-litter should be wrapped well round each plant close to the ground, and up nearly to the top of the leaves, as a protection from frost, following this with a surface-dressing of half-rotten dung between the plants. This should be forked into the ground the following March or April, when, as already stated, blanks in the plantations, caused by frost or other cause, should be filled up in the manner indicated.



Fig. 1. GLOBE ARTICHOKE.

Varieties.—The varieties cultivated in this country are:—

- 1. Globe Artichoke.— This has a dull, purplish round head, with the scales turned in at the top. It is the variety most commonly cultivated in this country.
- 2. Green or French Artichoke.—This variety has a conical head, with scales pointed and turned outwards.
- 3. Purple Artichoke has a medium-sized head, the scales pointed, green at the base, but tinged with purplish-red on the outside

at the tips. It is earlier than the preceding varieties, but the heads are not quite so large.

ASPARAGUS.

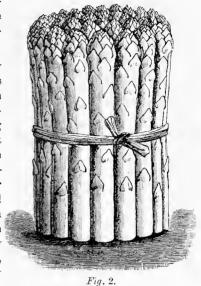
(Asparagus officinalis.)

This hardy perennial is a native of the sea coasts of various countries in Europe and Asia. It is also said to grow wild in the Isle of Portland,

in the fens of Lincolnshire, and sparingly on Seaton Links, near Edinburgh. The asparagus plant consists of a cluster of fleshy roots con-

nected at the stem, where a quantity of buds is formed, from which shoots annually push. It is propagated from seed.

Raising Young Plants. - Sow the first week in April in drills 2 in. deep and 12 in. apart, in light, rich, and sandy soil, to supply young plants for transplanting the following year into permanent beds. The seed should be sown thinly—say, ½ in. between each in the drills, the soil closed over them with the feet, trodden, and afterwards raked over with an ordinary-sized iron rake. the young plants come up they should be kept free from weeds, and when they become yellow (ripe), about the end of October, they should be cut down to within a



ASPARAGUS.

couple of inches of the ground, and covered with a coating, 3 in. deep, of rotten dung as a protection from frost; otherwise the fleshy roots of the plants, being close to the surface of the soil, would be injured in the event of severe frost.

Preparing the Ground.-With regard to the kind of soil suitable for asparagus, I have seen first-rate "grass" cut from plants growing in a piece of cultivated black bog in Ireland, whilst from plantations made in strong Worcestershire loam, enriched with manure, the very best results have been secured. However, let the soil be light or heavy, it should be trenched to a uniform depth of from 2 to 3 ft., according as the soil is shallow or deep, and a liberal dressing of good rotten manure should be added as the work proceeds. Trenching is a more convenient and a much better way of doing the work than digging the ground two spits deep. This is how it is done: the necessary quantity of manure having been previously wheeled on to the plot of ground to be trenched, open a space at one end from 2 to 3 ft. wide, according to the depth of soil; wheel the excavated soil to the other end of the plot to fill in the last trench with. If the bottom spit, or substratum, is poor, only loosen and level it, putting over it a good thickness of short rotten dung, say, from 3 to 5 in. thick. This done, proceed to open the next trench by putting the top spit of soil over the dung in the bottom of the one thus made, breaking it with a spade as the work is proceeded with. Follow this with another layer of manure above the first layer, then another spit of soil, together with shovellings, giving a third application of manure, and over this the remaining portion of the soil to form the depth indicated. The bottom of this trench should also be loosened, and the operations carried out as in the previous case until the whole plot of ground is trenched. The sooner the trenching is done in the autumn or early winter months the better, so as to afford ample time for the soil to settle down, as well as for its exposure to the weather before planting time arrives.

Planting.—Mark off the necessary number of beds at 4 ft. wide, with an alley or pathway 2 ft. wide between each bed. At each end of the beds drive two stout pieces of wood, about $2\frac{1}{2}$ ft. long, well into the ground, so as to preserve the width of each bed and alley. This done, fork the bed over, and afterwards throw up a little of the soil out of the alleys on to the beds, breaking and levelling this with a rake. draw three drills about 4 in. deep the entire length of each bed with a draw-hoe-one in the centre and one on either side at 14 in. from the centre one-and in these plant the roots, 18 in. asunder in the row, taking half of the roots in one hand and half in the other, the better to place them along the bottom of the drill, with the crown or centre of the fleshy roots slightly raised. Press the soil firmly about the roots with the hand, and then cover the surface of the soil with a couple of inches thick of decayed manure. This "mulching," as it is called by professional gardeners, will preserve the roots in a healthy growing state, the benefit being noticeable in a marked degree should a spell of fine, dry weather follow the planting period. In planting, set the first plant in the middle row, at 9 in. from the end, and begin planting those in each of the other two rows on either side at 18 in. from the end of the rows. This will afford more room to the plants to grow than if they were planted opposite to each other. The planting should be done before the plants have pushed into growth; this varies from the end of March to the middle of April, according as the season and situation are early or late. Choose a showery day for planting the roots, but, in the absence of rain at that time, water must be given at the roots, using a garden watering-can having a rose or spray distributor on the pipe to settle the soil about the roots. If extra large asparagus be desired some four vears after planting, only two rows of plants should be put in each bed. The rows should be 15 in. from the alleys, and the roots should be planted, as already advised, 18 in. apart in the drills, and in the manner recommended above.

Varieties.—Connover's Colossal is a very large and early variety, fit to cut two years after sowing. Reading Giant is another excellent variety. Three ounces of seed will be enough to sow a drill 50 ft. long.

Summer and Autumn Treatment.—This consists in keeping the beds free from weeds, and, in the case of established plantations of asparagus, free from seedling plants, which should be pulled up as soon as they appear. These seedlings spring from ripe seed dropped off the plants the previous autumn, and if they were allowed to remain they would year by year render the permanent plants less productive and the produce inferior. As soon as the cane-like stems of the plants are ripe—usually towards the end of October—cut them off close to the ground, saving a few of the best berried ones for seed, suspending them in a dry, airy shed for a few weeks, when they may be shelled, the seed washed in a fine sieve, dried, and put away for future use, draw a little of the surface soil off the bed into the alleys, and place on instead a 3-in, coat of the best manure at command. This should be covered with a depth of 3 or 4 in. of soil from the said alleys early the following March, breaking it fine as the work proceeds, and afterwards rake over the surface of the beds with a medium-sized iron rake.

Cutting Asparagus.—This must be done with care, otherwise a large percentage of the heads will be destroyed before they appear through the soil. The knife should be worked carefully down to the base of the stem to be cut, so as not to injure any neighbouring undeveloped growths. When the asparagus heads are 2 in. above the soil, cut them, working the knife, as already advised, carefully down to the base of the stem. These will be about 7 in. long when cut, the top couple of inches (which appear above the soil) being green, and the remainder blanched white. The heads should then be washed, "sized," that is, the small heads should not be mixed with the large ones, and tied up in bundles, consisting of from 25 to 100 heads, and then be stood on end in saucers containing a little water in a cool cellar or shed, till required for use. As a rule, only the top 2 in. of the asparagus heads are fit to eat, the remaining portion being tough and stringy. Cutting should be discontinued in the southern parts of England about the middle of June, and in the northern parts a fortnight later, so as to allow the plants time to grow up to make foliage, and, consequently, fresh roots, and thus to acquire more vigour for the ensuing year.

BASIL.

(Ocymum.)

THERE are two varieties of the basil cultivated for their aromatic leaves, which, with the tops of the plant, are used for flavouring soups, sauces and stews, and in other ways. The plants are cut when coming into flower, dried in the shade, and afterwards tied together in small hundles and hung up in a dry shed or cupboard, or placed in paper bags, until required for use.

The species referred to above are:-

- 1. Common Sweet Basil (O. basilicum).
- 2. Bush Basil (O. minimum).

These are both annuals, and, being natives of the East Indies, are tender, and therefore require growing in a sunny situation. They are both raised from seed. The seed should be sown in heat in a pan early in April, and be transplanted about the middle of May, in light, rich soil in rows 1 ft. apart and about 9 in. from plant to plant in the row, making the soil moderately firm about the roots, and then giving water to settle the soil.

BROAD BEANS.

(Faba vulgaris.)

THE broad bean is an annual, a native of the East, although of what part is uncertain, but it is generally believed to belong to Persia. There are a great number of varieties of the broad bean cultivated in this country, but, as many of these are very similar, if not identical, and good results can be secured from the cultivation of a few well-chosen and previously-tested varieties, I shall content myself with particularising only the very best and most profitable varieties, which are given below.

Soil.—The bean will grow comparatively well in an ordinary garden soil, but, like most garden crops, it does best in a deep, sandy loam, as it has a long, tapering root extending downwards in a perpendicular direction to a depth of about 18 in. Therefore, shallow soils are not suitable for its profitable culture.

Preparing the Soil.—If the nature and condition of the soil is not favourable to the growth of the bean, something should be done with a view to improving it. If it is too stiff, much may be done, if the garden is properly drained, by the liberal use of leaf-mould and chalk, which should be well mixed with it, and the land in that case should be ridged up roughly during the winter, so as to fully expose it to the influence of frost. On the other hand, if the soil is too light, recourse should be had to the use of clay, roadside parings, and such like materials, which will produce a beneficial change in its quality. The ridges should be levelled a few days before the ground is sown.

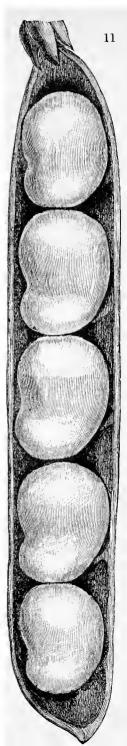
Sowing.—About the middle of November, make a sowing of Early Mazagan, in a dry, warm situation; sheltered from the north, in drills 3 in. deep, and 2 ft. apart. Plant the beans zig-zag in the drills, 3 in. asunder. Then return the soil removed in the formation of the drills over them with the feet, and, if it is of a light nature, tread and rake it over. A sowing of Seville Longpod may be made the end of January, weather permitting, allowing from 2 to 3 ft. between the

rows and 4 in. between the beans in the drills, sowing Mammoth Longpod the third week in February, and Prolific Longpod and Leviathan a month later, for main crop, allowing 3 ft. between the rows of these, and again in April and May for succession, making a sowing of Seville Longpod in a warm situation in June for a late crop.

After Treatment.—As soon as the beans are a couple of inches above ground they should have a little soil drawn up to them on either side of the row, following this with a few inches thick of short dung, extending 9 or 10 in. from the rows each side, and, in the case of the early sowing, the whole space between the ranks should be covered, in order to prevent the frost from penetrating the soil about the roots of the plants. In summer this mulching or surface-dressing with manure will have a fourfold effect, namely, (1) it will conserve the moisture at the roots; (2) keep the soil about them in an equable condition: (3) every time water is applied thereat it will wash the constituents of the manure down to the roots; and (4) it will keep the plants in bearing longer and tend to the production of heavier crops of better produce than could otherwise be secured. These remarks apply with equal force to ranks of dwarf and runner beans, as well as peas.

When the haulms of the Early Mazagan have attained to a height of 2 ft., pinch off the tips, serving the other varieties the same when the haulms have reached 3 ft., the object being to hasten the process of podding. Bean-sticks should be tied horizontally, at 2 ft. from the ground, to stoutish upright sticks pushed well into the ground on either side of the ranks, and be tied together to the upright sticks, as a support to the heavily-laden haulms. Failing the bean-sticks, a stout string run along on each side of the rows, and given a turn round a few upright sticks, will answer the same purpose, though not so well, as the haulms rubbing against the string are liable to get cut.

The plants should be kept well supplied with water at the roots during dry, warm weather,



otherwise they will not grow so freely as they ought to, nor continue in bearing so long. The beans should be gathered for use before the pods lose their fresh green colour. Any old pods remaining on the plants after those fit for table have been gathered should be saved for seed. If the ground is required immediately for other crops, the haulms can be pulled up and placed in the sun until the seed is properly ripened, when they should be picked off the stems, shelled, and stored away, labelling each variety.

Varieties.—1. Early Mazagan, although classed in many seed catalogues as being the earliest bean, is, nevertheless, not so early as Seville Longpod by a week, but it is of excellent quality, and is more manageable for growing on borders and other small spaces than the more robust-growing varieties. It is, moreover, a very heavy cropper, and quite hardy, and for these reasons, although the pods are small, I place it first on the list.

- 2. Seville Longpod.—Stems 2 to 3 ft. high, according as the ground is poor or rich, moderately robust and sparingly branched; pods 7 to 9 in. long, containing about six beans of the best quality.
- 3. Giant Wonder Bean is an extraordinary large and long-podded variety, nearly as early as Seville Longpod, and of fine flavour.
- 4. Mammoth Longpod.—This is a strong-growing variety. The long, broad pods, which are produced abundantly, sometimes attain the length of 16 in.
- 5. Improved Windsor is a great improvement on the old variety. The pods are broad, of a dark green colour, and are produced with great freedom.
- · 6. Leviathan is a wonderfully robust-growing variety, and an immense cropper, the pods frequently reaching a length of 16 in. under good cultivation.

Other varieties, such as Beck's Dwarf Green Gem, and Green Windsor, are also well worth growing.

Insect Attacks.—The bean is subject to the attacks of many enemies; the most destructive of these is the "blight," caused by the Dolphin Fly (Aphis fabæ). This insect attacks the young shoots and the leaves on the top of the plant, usually when the beans are beginning to swell in their pods. The infested parts should be cut off and burnt immediately the presence of the fly has been discovered, because if thrown on the ground the insects will crawl on to the growing plants and renew their work of destruction. If these depredators were allowed to go unchecked, in a short time nothing but the bare blackened stem of the plants would remain. Mice sometimes attack the beans before they appear above the ground, but these can be trapped. In order to prevent these attacks, some cultivators sow chopped furze in the drills with the beans. A quart of beans will sow a row 20 yards long.

DWARF, or KIDNEY BEAN.

(Phaseolus vulgaris.)

THE kidney bean, also called French bean in gardens, is a tender annual, a native of India, and is probably indigenous to Cashmere and other northern parts of that territory. It is one of the most esteemed and productive of garden summer vegetables, as a large amount of produce may be taken from a comparatively small piece of ground within the space of six to eight weeks from the time of sowing.

Soil.—Any light, rich soil, resting upon a gravelly subsoil, will suit the requirements of this bean, but the situation should be warm and sheltered from the north. A border in front of a south wall or wooden fence is the most desirable position. If the ground has not been well manured for the previous crop, short, well-rotted dung should be dug into the ground some time previous to depositing the seed.

Time and Manner of Sowing.—Make the first sowing about the middle of April in the southern parts of the kingdom, and ten or fifteen days later in the northern parts, in drills 3 in. deep and 2 ft. asunder, allowing 3 in. from seed to seed in the row. Then close the soil in over the seed and tread and rake it over. In order to maintain a good succession of this much-prized second-course vegetable, a sowing, more or less extensive, according to the demand for the same, should be made every fortnight or three weeks up to the middle or end of July, according as the climate is warm or cold. As soon as the beans are 2 or 3 in, above ground, they should have a little soil drawn up to them on each side the row, and when they come into flower the points should be pinched off the plants to hasten the process of podding. It would be advisable in case of frost to have some kind of protection at hand for the first and last sowing, such as a few mats, rick-cloths, &c., supported by a temporary framework. For the main crop, Canadian Wonder should be sown. The beans should be picked before the seed show through the pods; and when they become too old for cooking purposes, and the pods are turned brown, they should be saved for seed, the haulms being cleared away and the ground cropped with lettuce or endive. One pint of seed will be sufficient to sow a row 27 yards long. If a garden frame is available, plants may be raised in small pots and boxes, for transplanting out of doors as soon in May as may be considered safe. Gatherings may, in this case, be made a fortnight earlier than could be obtained from plants from seed sown in the drills.

Insect Attacks.—Red Spider (Acarus telarius) is the most formidable enemy of the kidney bean. If its progress is not checked, these pests will in a very short time destroy the leaves and ultimately kill the

plants. Their presence on the plants is to be attributed to a dry, hot atmosphere, and a deficiency of moisture at the roots. The remedy is to syringe the plants thoroughly in the evening, and to give plenty of water at the roots during hot summers.



NE PLUS ULTRA BEAN.

Varieties.—The best varieties of the kidney bean are:—

- 1. Ne Plus Ultra.—One of the earliest, shortest, and most productive beans grown. It is of compact habit, having from 60 to 70 good-sized pods on each plant.
- 2. Longsword is an exceedingly fine bean, being long, handsome, heavy cropper, and good quality.
- 3. Canadian Wonder (Selected) is an improvement on the old Canadian Wonder bean. The pods are of immense length, very handsome, and are fit for use several days earlier than that good old variety, although sown at the same time.
- 4. Osborn's Forcing.—A dwarf and very productive variety, having a good hardy constitution.

CLIMBING, or RUNNER BEANS.

(Phaseolus multiflorus.)

This half-hardy perennial is a native of South America. There are very few cottage gardens in this country that do not contain one or more rows of scarlet runners in the summer and autumn months. But, well known as the plant undoubtedly is, it is not generally known that it is a perennial, having tuberous roots like the dahlia, and these, after having been kept in a dry, cool place, out of the reach of frost during the winter, and planted out in the middle or about the third week in April,

will come into bearing earlier in the season than plants raised from seed sown at the same time. The roots of the scarlet runner are poisonous.

The best varieties to grow are :-

- 1. "A. 1."—This is a prodigious cropper, producing long, straight pods of excellent quality.
- 2. Elephant (new) is twice the size of the ordinary runner, very productive, and good in quality.
- 3. Excelsior Runner is another greatly improved type of scarlet-runner bean.

Other good varieties are Ne Plus Ultra, Painted Lady (or York and Lancaster), and Champion Scarlet.

Soil.—The scarlet runner will succeed in any ordinarily good soil, but if it is grown in a light, saudy, and moderately rich leam, the heaviest crops and finest produce will be secured.

Time and Manner of Sowing.—The third week in April will be soon enough to make the first sowing in the south, and ten or twelve days later in the north. Where stout bean-sticks from 10 to 20 ft. high can be had, this bean should be sown in drills running east and west, 3 in. deep, 8 ft. apart, and from 9 to 12 in. apart in the row. The first drill should be sown at the north side of those which are to follow, so that the row of plants from which all the eatable produce has been gathered may afford protection in the autumn to those in full bearing. When the "runner beans "are about 4 in. high they should have a little soil drawn up to them on either side, and then be staked, putting a stick on each side of the plants. These, if of the length above indicated, should be braced together by placing a series of bean-sticks horizontally on each side, at about 6 ft. from the ground, and securing them in that position by a series of cross ties made of tarred string, so as to prevent their being affected by rough winds. Unlike other beans, the plants should not be pinched, but, on the contrary, they should be allowed to grow to their full height, and as the beans are gathered from the lower portion of the plant others will form and develop higher up, and will continue to do so until the plants have reached the top of the supports or have been cut down by frost. Thus grown, two sowings will be ample, one at the time named above, and the other two months later. Where long sticks cannot be obtained, the seed may be sown in drills at from 4 to 6 ft. apart, according to the length of the sticks. A row or two of cauliflower or cabbage may be planted between the rows, and the beans may be kept pinched to that height. A second sowing may be made the third week in May, and a third and fourth a month later. Another plan, that has the advantage of saving space, and at the same time affording a striking example of the useful and ornamental combined, is to sow the seed on elther side of a central walk, and train the plants into an arch by tying

the tops of the bean-sticks together overhead, thereby forming an ornamental arbour and pleasant retreat from the heat of the summer's sun. The plants require plenty of water being given them at the roots during hot, dry weather, especially at the time the pods are forming and swelling. The taking of the crop and saving seeds are carried out in the same manner as advised in the case of the kiduey bean.

CLIMBING FRENCH BEAN.

(Phaseolus Scandens.)

Until about six years ago the fact of a French bean having attained to a height of 6 or 7 ft. was an unheard-of occurrence in the horticultural world, although the bean in question had been selected from Canadian Wonder and grown pretty largely by the present writer for about twelve years before it was grown in the Royal Horticultural Society's Trial Gardens at Chiswick, where it obtained a first-class certificate and was put in commerce the following spring.

The seed should be sown at the same date and in the manner advised for the kidney bean, allowing 4 ft., instead of 2, between the rows where more than one is grown side by side. When the plants have attained to a height of about 3 in. above ground, put a row of pea or bean-sticks from 6 to 7 ft. long on either side for the plants to climb up. And then lay on a good dressing of half-rotted, manure, to the depth of 4 in. and about 12 in. wide on either side the rows of plants.

Thus treated, I have had the bean attain to a height of 8 ft., yielding from bottom and top good supplies of long, handsome pods of the Canadian Wonder type and fine in quality, from the middle of July until the plants were nipped by autumn frosts. It is a prodigious cropper when given generous treatment in the way of a fairly light, well-enriched ground to grow in.

BEET-ROOT.

(Beta vulgaris.)

Is a hardy biennial and a native of the sea coast of the south of Europe, and from it numerous varieties have been propagated. Where seed is saved from two or more varieties growing a short distance from each other, the seedlings will partake more or less of the character of both or all of those varieties. This is caused by the bees carrying the pollen from one variety to another in their search for honey. Hence the multiplicity of new varieties, some of which—those resulting from careful

hybridisation—are improvements on the old varieties, whilst many, or most of the others would be better left out of seed-lists altogether; they only perplex those not well versed in the subject in the making out of their seed-lists. It is the same with all kinds of vegetables; there are too many varieties by half enumerated in trade-lists.

Varieties.—The following well-tested varieties may be relied upon for all culinary purposes:—

- 1. Perfection is of medium size, rich crimson-lake colour, and splendid flavour; foliage shining and dark.
- 2. Pine Apple Short-Top.—This is a dwarf, compact growing variety, having leaves 6 to 7 in. high, dark purple, the stalks tinged with dull orange; roots 6 to 9 in. in circumference; flesh, deep crimson; when cooked is everything that could be desired.
- 3. Covent Garden Red.—Roots of good average size, being solid and deep-coloured throughout; when cooked, tender, sweet, and well flavoured.
- 4. **Pragnell's Exhibition** is a remarkably handsome variety. The roots are smooth and of medium size, the flesh being of a rich crimson colour and of good quality.

Other good varieties of beet are Excelsior, Blood Red, and Crimson Perfection.

Soil and Situation.—Beet will do well in any light, deep, and moderately rich soil; but the latter should not contain traces of any recent or strong manure, inasmuch as a rank soil, or one which has been dressed with animal manure shortly before sowing the seed, will yield ugly, coarse roots. Therefore the seed should be sown in an open plot of ground which had been well manured the previous year. The best results will be secured from seed sown in a light, loamy soil away from the shade of trees. It requires an open situation.

Preparing the Soil.—The ground should be deeply dug some time before sowing the seed, by which time it should be nice and mellow by reason of its exposure to the



Fig. 5. PERFECTION BEET.

weather. If the soil is of a heavy nature, it should have some chalk or leaf-mould added to it as soon in autumn as the space is cleared of the summer crops, and ridged up for the winter. Advantage should be taken of dry weather to level down the ridges, and dig the whole

regularly over just before sowing, treading the soil down as soon as it has been dug, raking it over, and making it level preparatory to sowing the seed.

Seed and Sowing. —A small sowing may be made in warm districts the third week in March, with a view to securing roots for use between those of the previous year and those from the main sowing of the current year. This sowing, however, will run the risk of being destroyed by late spring frosts; therefore the sowing should be but a small one, as already stated. The seed should be sown in drills from 1 to 2 in. deep and from 12 to 15 in. apart. The seed may be sown about 2 in. asunder in the row; the soil should then be closed in with the feet, trodden, and raked over. If the soil is heavy rather than light, 1 in. will be deep enough for the drills, and if light, 2 in. will be none too deep. The main sowing may be made the third week in April in warm districts, and a week or ten days later in less favoured parts.

After Treatment.—When the young plants are large enough to handle they should be thinned out at from 6 to 9 in. in the row; and if it is necessary to extend the crop, the thinnings may be transplanted in ground prepared as recommended for the reception of the seed, and at the distances indicated, doing the work in showery weather, and taking care that the roots of the individual plants are not bent in transplanting. The plants should be kept free from weeds. The Dutch hoe should be run between the rows occasionally during the summer months, both for the purpose of destroying seedling weeds and stimulating growth. Two ounces of seed will sow a row 50 ft. long.

Taking up and Storing the Roots. -Towards the end of October the roots should be stored, selecting a fine day for the work when the ground and plants are dry. In order to preserve their freshness the roots should be packed in damp material, which will not tend to absorb the moisture from them, and for this process the following is the most simple and effectual method: the roots should be taken up before they are injured by frost, and with care, avoiding breaking or wounding them in any way, as that would cause them to bleed and, consequently, to lose their colour. They should be taken to a dry situation, such, for instance, as a border under a south or west wall or wooden fence. Earth should be taken out at the end of the border so as to form a trench 12 or 15 in. deep and about the same width, and the digging of the ground be proceeded with. When the trench is filled and the ground has been levelled in the ordinary way, the soil should be cut straight down the whole width of the border, and two or three rows of beet-root be placed perpendicularly in the opening thus formed, and digging be again proceeded with until the roots are all covered, burying the crowns

about 1 in. under the surface of the soil. The operation is thus continued somewhat after the mode of transplanting young forest trees from the seed beds in nurseries, until the work is completed. The leaves, which should not be removed from the crown of the root, will afford sufficient protection for the roots from several degrees of frost, but, in the event of its being severe, a protection of dry litter or fern (the common bracken, which, being very plentiful in some districts, is used as a substitute for straw) will be necessary. This should, however, be removed on every favourable opportunity and returned in frosty weather. In the spring, before the roots show signs of growth, they should be taken up, the leaves (with the exception of those roots intended for seed), with a portion of the crown, cut clean away, and the roots laid in again as before. The roots will thus keep fresh and of good colour.

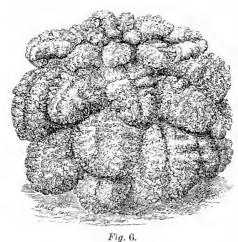
Saving Seed.—About the third week in April the necessary number of roots of any variety of which it is intended to save seed should be planted, at from 12 to 15 in. asunder, at the foot of a southern wall, to which the flower-spikes should be secured in due time with a length of string, or thin flower-sticks tacked to the wall or fence with a few nails and shreds, so as to expose the flowers well to the sun, as well as to prevent the plants from being broken by the wind. The roots should be watered as soon as they are planted to settle the soil about them. Some time between the middle and end of October, according to the season, the flower-spikes should be cut, tied together in small bundles, and hung up in a dry, airy shed, and be rubbed out and cleaned a month or two later and put away for future use.

Insect Attacks.—The roots of young plants are sometimes attacked by the grubs of the Dart Moths (Agrotis segetum, A. exclamationis). This may be prevented by hand-picking, and by strewing sufficient fresh soot over the ground to cover it before drawing the drills for the seed.

BORECOLE, or KALE.

 $(Brassica\ oleracea\ acephala.)$

This is one of the hardiest divisions of the Brassica family, and on this account it is mainly depended upon in northern counties to produce a supply of winter greens. It is pretty generally grown in most Europeau countries; therefore many of the varieties have gained a multiplicity of names. The following are the hardiest as well as the most useful and generally grown varieties now enumerated in tradelists:—



EXTRA CURLED SCOTCH KALE.

- I. Extra Curled Scotch.

 The plants are dwarf in habit, and the leaves beautifully curled; it is the hardiest of all borecoles.
- 2. Welsh Kale. The leaves of this novelty are beautifully fringed and curled, rich glaucous-green colour, and fine flavour.
- 3. Cottagers' Kale.—The stem of this well-known hardy variety usually attains to a height of 2 ft. Some of the leaves are plain, others curled, some green, others purplish-green. The

plants throw out an abundance of shoots in spring, and furnish a good supply of tender greens.

Other good varieties are Moss Curled, New Perpetual, Dwarf Green Curled, Asparagus Kale, Prolific, Dwarf Late Curled, Hardy Winter Greens, and Variegated Kale. Only a small quantity of the latter should be grown, for garnishing purposes. It is very ornamental, as almost every plant will show two or more distinct colours.

Soil.—Borecole will succeed in any ordinary garden soil which has been enriched with manure, and in an open situation, the most satisfactory results being, as is the case with all the Brassica tribe, secured from plants growing in a rich loamy soil.

Preparing the Ground for and Sowing the Seed.—The ground, having been previously dug, should be trodden over when the soil is dry enough not to adhere to the feet, raked over, and marked off into beds 4 ft. wide, with an alley 1 ft. wide between each bed. A space a yard long of such bed, divided into four pieces by the impression of the marking-rod, will be amply sufficient space in which to raise the necessary quantity of plauts of a like number of varieties for the stocking of any cottage garden; we say beds, because a pinch of seed of lettuce, cabbage, cauliflower, savoys, leek, and Brussels sprouts will require sowing at the same time as the borecoles. A small sowing of dwarf curled Scotch Borecole should be made at the end of February, the main sowing a month later, making a small sowing the end of April or early in May, for supplying plants for yielding pickings late in spring. The seed should be sown thinly, and be covered with soil

taken from the alleys, to the depth of $\frac{1}{2}$ in. This should be broken fine before distributing it over the seed, and then be raked over, beaten down with the back of the spade, to compress the soil and seed, and the alleys be neatly cut off at the width indicated. This done, a piece of garden netting, supported by a few forked sticks, should be put over the beds to save the seed from the ravages of oirds, the most destructive of which are the chaffinches.

Pricking out the Seedling Plants.—As soon as the plants are large enough, and before they become crowded in the seed beds, they should be pricked out in beds or rows 6 in. apart, and at the same distance in the rows, letting the plants down to the bottom leaves in the ground, and making the soil firm about the roots with the setting-stick, and then water to settle the soil about the roots. Plants of all the Brassica family, lettuce, &c., are too frequently allowed to remain too long in the seed beds, with the result of the plants becoming "drawn," longlegged. &c. Plants from which the best possible results in the way of a crop are expected should, as in the case of animals, be treated properly from the beginning. If a little shading can be afforded to the young plants from sunshine for a few days after they are pricked out. it will greatly facilitate root action. An old mat put over a few bean-sticks, supported by forked sticks or a few spruce boughs or laurel branches stuck into the ground at the sunny side of the plants. will have the effect of establishing the plants as quickly as possible.

Transplanting.—The plants should be finally transplanted before they get crowded in the nursery beds. They should be planted in drills 3 in. deep, 2 ft. apart, and at the same distance from plant to plant in the rows, letting the plants down to the bottom leaves in holes made with the setting-stick. Cottagers' Kale should be given from 6 to 9 in. more room every way, as it is a tall, strong-growing variety. Before planting kales, broccolis, cauliflowers, and cabbages, the roots of the plants should be dipped in a "puddle" made of clay, sufficiently thick to adhere to the roots, and into which a double handful of fresh soot has been stirred. This will save the roots from the attacks of grubs, which are sometimes very destructive to the plants.

After Treatment.—This consists in drawing a little soil up to the plants in due time (when they are about 6 in high), and in keeping them free from weeds.

Saving Seed.—It is not advisable to save seed if any other variety of the same species has been in flower in the immediate neighbourhood at the same time, as such plants will invariably be crossed by bees, or even by flies. If there is no fear of crossing from these causes, select a dozen or two plants of the best types, and plant them in a row in a sunny situation towards the end of March or early in April. They

should have water at the roots when transplanted, and the stems should be supported to prevent them being broken by the wind. When the seed pods are formed a piece of garden netting should be placed over the plants to save them from the birds. When the seeds are ripe they should be rubbed ont, cleaned and dried, and placed in paper or canvas bags and put away in a dry situation. Seed thus saved will retain vitality for at least four or five years; so that a little seed of any desired variety can be in turn annually saved.

BROCCOLI.

(Brassica oleracea botrytis asparagordes.)

This well-known and highly-esteemed vegetable is a hardy bieunial, but not so hardy as many others of the cabbage family. It is a native of Italy and other places on the shores of the Mediterranean. Within the last dozen years many excellent varieties have been introduced into commerce by our great seedsmen, with the result that it requires a very good judge indeed to distinguish between some of the new broccolis and cauliflowers. They may now be had nearly all the year round in the south of England by growing the following varieties, and giving the plants good treatment.

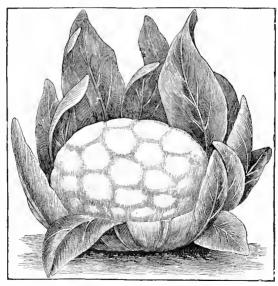


Fig. 7.
MICHAELMAS WHITE BROCCOLI.

FIRST EARLIES, FOR CUTTING IN SEPTEMBER, OCTOBER, NOVEMBER, AND DECEMBER.

- 1. Michaelmas White.—The heads of this excellent autumn variety are of great size, pearly white, and turn in quickly towards the end of September.
- 2. Self-Protecting.—This very valuable broccoli for autumn and early winter use is of robust growth. The heads are beautifully white, firm, and compact, and are well protected by the leaves from the effects of early frosts.



Fig. 8.
SELF-PROTECTING BROCCOLL.

3. Grange's Autumn Cape.—A compact growing variety, producing medium-sized white, close heads during the autumn months.

Improved Purple Cape, New Autumn White, and Early White Cape are also good autumn varieties.

SECOND EARLIES, FOR CUTTING IN JANUARY, FEBRUARY, AND MARCH.

4. Winter Mammoth.—A large broccoli, coming into use in the middle of winter. The plants are strong-growing; the leaves, lapping well over the white heads, protect them from frost.

- 5. Norfolk Giant.—This is a very good early winter broccoli, producing large, firm, close heads.
- 6. Winter White is a fine hardy dwarf winter variety; the heads being of medium size, close, and of good quality.
- 7. Snow's Winter White. —This is a spring broccoli, the heads are of medium size and well protected by the foliage.

Other good varieties are Brimstone, Frogmore Protecting, and White Sprouting Broccoli.

THIRD EARLIES FOR CUTTING IN MARCH, APRIL, AND MAY.

- 8. **Perfection.**—This excellent variety produces, under ordinary treatment, handsome heads of snowy whiteness, immense in size and first rate in flavour. It is of compact and robust habit and very hardy, being well protected with leaves.
- 9. Champion is another fine dwarf late variety, producing large white heads.
- 10. Eclipse.—Very hardy and late. Heads large and of good quality.
- 11. Early Spring.—A robust growing variety, with medium-sized handsome white heads, close and well protected.

Matchless and Wilcove White are also good and well-tested hardy varieties.

FOURTH EARLIES FOR USE IN MAY AND JUNE.

- 12. Mammoth Spring White.—This is a very large late broccoli, producing immense white heads well protected by the leaves.
- 13. Late Queen.—This is dwarf and compact in growth. It is rarely affected by frost, and produces large white heads in May and June.
- 14. Model is another most desirable broccoli for late use. The heads are beautifully white, medium size; very compact broccoli, conical in shape.
- 15. Richmond Late White is a good all-round late broccoli, being a good grower with heads of excellent quality.
- Soil.—The broccoli delights in a good loamy soil, resting upon a gravelly substratum, and inclining to be heavy rather than light. And for the growth of plants "heading" in September, October, and November, the best possible results will be secured by deeply digging and liberally manuring the ground prior to settling the plants. But for plants which have to remain in the ground and to withstand the effects of severe weather throughout the winter and early spring months, the case is quite different, because in that case the plants would make a too luxuriant and sappy growth, and succumb to severe

frost. On this account, all mid-winter and late broccoli plants should be planted in hard ground which has not recently been manured, such, for instance, as that from which the pea crop or old strawberry plants had been taken; the plants being let well down to the bottom leaves in holes made with the crowbar, and a little of the soil worked into each hole with the setting-stick in planting, afterwards giving a little water to settle it about the roots of the plants. Plants thus set, always assuming that they had been pricked out and subsequently transplanted before they became crowded in the seed and nursery beds, will make a sturdy, consolidated growth, which will stand severe frosts with impunity, there being no bare, sappy stems (the result of the plants having been crowded in the seed beds, &c.) exposed to the weather. The higher and more exposed be the situation in which broccoli plants are growing, the less liable will they be to sustain injury from frost.

Seed and Sowing.—It will be advisable to make two small sowings of the several varieties grown by each cultivator, one the middle of April and the other three weeks later. The method of sowing, subsequent treatment of the seedlings, final transplanting, and puddling of the roots of the plants before planting being the same as recommended for borecoles, they need not be again detailed here. broccolis described as "dwarf" should be given a distance of 2 ft. between the rows, and the same distance between the plants in the rows, giving 6 in. more room every way to those varieties which are described as "strong" or "vigorous." If the weather should be dry at planting time, with no immediate prospect of rain, the plants should be well watered at the roots an hour or two before removing them. iu order to take them up with a little soil attached to the roots. the ground should first be loosened about them with a five-tined If the plants are set out in their final positions in showery weather they will experience very little check in the process of transplantation, but in the event of the work having to be done during a spell of dry, warm weather, the plants should be watered at the roots when planted, and afterwards every second or third day until they have re-established themselves; after which, if the soil should be of a stiff and consequently retentive nature, they will not require any further supplies of water.

After Treatment.—When the plants have started well into growth, they should have a little soil drawn up to them on either side and be kept free from weeds. As soon as the broccoli begin to "turn in," in late autumn, winter, and early spring, they should be looked over, and any of the heads that are not fit to cut, and which are not protected by their own foliage, should have the leaves bent over them. This, as a rule, will save the heads from being injured by frost.

Insects.—The broccoli and all the cabbage family are subject to the attacks of the insects mentioned in connection with cabbages, and the remedies are the same as there specified. One ounce of seed will sow four square yards. Seed should be saved in the same way as recommended in the case of borecole.

BRUSSELS SPROUTS.

(Brassica oleracea bullata gemmifera.)

This is a very old inhabitant of the kitchen garden, as shown by a reference made to it in the year 1213 in connection with our "Market Regulations" under the name spruyten (sprouts), which it bears to the present day. This vegetable has long been extensively cultivated near



Fig. 9.
EXHIBITION SPROUT.

Brussels, whence it derives its name. When well grown, the amount of eatable produce is more than equal to that of the kale. Hence the wonder is that it is not met with more frequently in cottage gardens; its culture, too, being as easy as that of horecole.

1. Varieties.—Exhibition Sprout is one of the finest all-round Brussels sprout in cultivation. The leaves are small, crumpled, and of a pale-green colour, standing well out from the stem. The buttons are large, solid, of good flavour, and are fit for use before any other variety sown at the same time and transplanted in the same piece of ground.

Aigburth, Scrymger's Giant, Extra Fine Selected, Victoria, Colossal and Imported are also very good

varieties of Brussels sprouts to grow in the poor man's and rich man's gardens alike.

Soil.—Brussels sprouts will succeed in any ordinary garden or cultivated field. Deeply-trenched and liberally-manured soil is not in this case necessary for the production of the most satisfactory results; quite the reverse, inasmuch as it promotes a too luxuriant growth, and so tends to the production of large, loose sprouts, instead of medium-sized, close, firm ones, as result from plants growing in soil of average fertility, and from 9 to 15 in. deep.

Seed and Sowing.—It will be advisable to make three small sowings; the first early in March, the second the first week in April, and the third a month later. Plants resulting from these sowings will yield a good succession of produce. For details respecting seed sowing and subsequent treatment of the plants, see remarks on borecole.

Distances between the Plants.—Where the ground is deep and rich, and plenty of it, 3 ft. will be none too much between the rows, and 2 ft. from plant to plant in the row, as the plants will grow tall in it; but in the case of soil of average depth and fertility, the plants may be set in rows 2 ft. apart and at 18 in. in the row.

The usual waterings must be given to the plants after they are planted and until they have re-established themselves—that is, in the event of the weather heing dry at the time. They should have a little soil drawn up to them when about 8 in. high, and be kept free from weeds.

At the base of every leaf on the stems of the plants buds are formed, and as these enlarge, the said leaves, having performed their proper function, drop off.

A couple of weeks before beginning to pick the sprouts—that is, before the latter are fully grown—the heads may be cut off the plants and be used as greens. This will direct the energies of the plant to the more speedy development of the sprouts.

One ounce of seed will sow four square yards.

CABBAGE.

 $(Brassica\ oleracea\ capitata.)$

This is a hardy biennial, derived from Brassica oleracea, which is found wild in Cornwall, Wales, Yorkshire, and near Dover, in Kent. It is also found wild on the coasts of France and of many other European countries. It was known to the ancient Gauls by the name of Chon Capa. Of the cabbage, like many other garden vegetables nowadays, there are too many varieties enumerated in trade-lists. They want weeding out considerably, as it is rather bewildering to those not practically acquainted with the leading sorts and varieties of vegetables to make a good selection from a trade-list. The wisest plan in this case would be to leave the selection to the seedsmen.

However, following the plan which we adopted when beginning this work, we shall make the matter of selection easy for those who consult these pages. Therefore, out of the hundred or more varieties of the cabbage which are to be found in catalogues, we shall only mention a few of the very best, which will serve the purpose of any cultivator as well, and, indeed, better, than if he grew all the varieties named in the catalogues. They are:—



- 1. Early Heartwell Marrow.— This very excellent early cabbage is suitable for all kinds and sizes of gardens. The heads are very firm, averaging 5 lbs., with scarcely any outside or loose leaves, tender, and good flavour.
- 2. All Heart is of moderate size, having a fine heart, somewhat pointed, delicate flavour, and it is very early and quick in growth. It is a fine marked cabbage.
- Fig. 10.

 3. Matchless is an excellent small, early variety of dwarf, compact habit, turns in quickly and hearts well, mild flavour, and is a very profitable variety to grow, as it can be planted about 15 in. apart in the rows and the same distance between the rows.
- 4. Imperial is a good cabbage for general crop, the heads are large, firm, tender, and very good in flavour.

Enfield Market, Nonpareil, Defiance (a very large cabbage), Red Dutch (for pickling), and Rosette Colewort (for sowing in June for early winter use).

Soil.—A deep soil, enriched with farmyard manure, is essential to the production of good succulent cabbage.

Preparing the Ground.—The ground in which it is intended to plant cabbages should be trenched at least two spades deep. This will allow of the bottom spit being turned up to the action of the weather, thereby subjecting substances in the soil, previously inert, to a fresh decomposing action, and rendering them available for the food of the plants. With the top-soil being placed in the bottom of each succeeding trench are destroyed the eggs and larvæ of insects detrimental to the well-being of the plants. In the process of trenching the manure should be well mixed with the soil, and should not be nearer to the surface than 9 in. Cabbages will grow in soil that is too stiff for turnip, beet, or carrots, but manure applied to soil of this description should be of a light and opening nature, such, for instance,

as decayed vegetable matter. They will also grow fairly well in light, peaty soil, but they will do much better in it after it has been dressed with roadside parings, lime, wood-ashes, old plaster, or clay.

When and How to Sow the Seed .- A pinch of All Heart and Matchless should be sown towards the end of February or early in March. Plants resulting from this sowing will be fit for cutting in July and August. Another sowing should be made a month later. This should consist of Imperial, Enfield Market, or any other popular and well-tested variety. The plants from this sowing will come in for use from August to November. A third sowing may be made in May for yielding young-hearted cabbage about Christmas, and if inclement weather should prevent their hearting, they can be used as greens or "eoleworts," as they are technically termed. The autumn sowing is the most important, as it yields plants for furnishing the spring and early summer cabbages; but the time for making it varies according as the district is early or late. From the middle to the third week in July will not be too soon for making this sowing in the north, and two weeks later will be time enough to sow in the south. Rosette Colewort should be sown the middle or third week of June for cutting from in winter. Red Dutch should be sown either early in March or the end of July. The finest specimens are secured from the seed sown at the latter date, the plants being planted out early in September. when plants of the ordinary cabbage, resulting from seed sown the same time, are being transplanted. The seed should be sown broadcast, and somewhat thinly, in a light and fairly rich soil in a warm situation. The ground, having been previously dug, should be trodden when the soil is moderately dry, raked smoothly over, and then divided into the necessary number of small beds. The latter should be 4 ft. wide, with an alley 1 ft. wide between each bed, and they may be divided and subdivided into the needful number of pieces, according to the extent of the sowing of various kinds and varieties of seeds. A slight covering of pulverised soil from the alleys should be scattered over the seed, the beds should then be raked, patted down with the back of the spade to press the seed and soil together, and the alleys should be neatly cut off by pressing the back of the spade with a "downward and inward" inclination against the lines indicating the 1-ft. space The beds should then be watered, if the soil is dry, between the beds. and covered with a piece of small-meshed garden netting, supported by short forked sticks, as a protection from the birds.

Pricking and Transplanting the Plants.—As soon as the seedlings are large enough, they should be pricked out 6 in apart in rows in a piece of ground prepared as recommended for the reception of the seed, setting the plants down to their lower leaves, and rendering the soil moderately firm about their roots, giving sufficient water through a

rosed watering-pot to settle the soil. The plants should be finally transplanted into drills 3 in. deep, 2 ft. apart, and at the same distance from plant to plant in the row, giving 9 in. less every way to dwarf, compact-growing varieties like Matchless. Coleworts should be only allowed 1 ft. between the rows and the same distance in the row. setting the plants in each succeeding row opposite the centre of the intervals between those in the preceding row. In planting cabbages, like everything else, advantage should be taken, if possible, of dull, moist weather, but in the event of dry weather setting in, the plants in the nursery bed may get so large as to render their transplantation necessary at all risks. The roots of the plants should be dipped in a clay "puddle," into which a couple of handfuls of fresh soot has been stirred, before being planted. This puddle, being made thick enough to stick to the roots, will render them distasteful to the attacks of the grub. In the absence of rain the plants should be watered every second or third day at the roots, until the latter have pushed well into the soil. This refers especially to plantations made during the summer months, as once or twice will be enough to water plants put out in spring and autumn. In poor soils the plants do not, as a matter of course, require planting so far apart as in rich soil; 18 or 20 in. will be ample space for varieties which should be given 2 ft. every way in rich ground. In the absence of rain at the time of pricking out and transplanting the plants, the seed and nursery beds should be well watered an hour or two before removing the plants, which, in the case of being finally transplanted, should be taken up carefully with the assistance of four-tined forks. In this way the roots will sustain very little injury in the process of transplantation. The only after treatment which the plants will require consists in frequently hoeing. This, in addition to killing the weeds, will stimulate growth in the plants.

Cabbages are best cut before they split or crack. After the first heads are cut, the plants will produce several small heads each during the summer and autumn months, and afterwards yield a plentiful supply of greens until the following March, when the ground will be required for other crops, say, potatoes.

To Save Seed.—The largest and best-shaped heads only should be selected by putting a stick in the ground alongside each specimen. The number of plants which are to be allowed to run to seed should be determined by the quantity which it is desired to save. As a rule, half-a-dozen healthy plants will yield seed enough to stock an ordinary-sized garden for three or four years. Only one variety should be saved at a time in the same garden. The plants should be taken up early in March and planted together in a row, burying the stems to the first leaves, treading the soil, and afterwards giving water to settle

it about the roots of the plants. A stick should then be put to each plant for support, and they should be protected from the birds by a piece of garden netting when the seed is ripening. The plants should be cut down before the seed begins to drop from the pods, and be spread out on a piece of canvas and put out in the sun for a few days until the seed can be easily rubbed out, when it should be cleaned, put into canvas or stout paper bags, labelled, and stored away for future use. One ounce of seed will sow eight square yards.

Insect Attacks. - The cabbage, like the cauliflower, broccoli, and savoys, is attacked by various insect enemies. The caterpillars of the White Cabbage, Turnip, and Rape-seed Butterflies (Pontia brassica, P. napi, and P. rapæ) work havor among the leaves. The caterpillars of the Cabbage Moth (Mamestra brassicæ) also do great mischief by eating the hearts of the plants, rendering them quite unfit for use. Hand-picking and dusting the plants with freshly-slacked lime while damp are the only safe and effectual ways of ridding the plants of these destructive and very troublesome insects. The roots of the plants, too, are frequently attacked by various kinds of grubs. These include the caterpillars of Heart-and-dart Moth (Agrotis exclamationis), of the Common Dart Moth (A. segetum), and the Great Yellow Underwing Moth (Triphæna pronuba), as well as the larvæ of the Crane Fly (Tipula oleracea). These eat through the tap-roots a little below the surface. The dipping of the roots of the plants in a "puddle" made of clay and a couple of handfuls of fresh soot before planting is a good remedy against the depredations of all kinds of grubs and insects, few of which will be found in soils which are annually dressed with fresh soot, or in which artificials instead of animal manures are used. Clubbing is ascribed to the work of maggots, they being generally found inside the protuberances on the roots. But this disease is seldom, if ever, heard of in connection with cabbage plants growing in soils which have been dressed as above; whereas, in soils which have been annually and liberally dressed with rich farmyard manure, I have known clubbing to be very bad indeed. In transplanting, all plants affected with this disease should be discarded; or, if plants are very scarce, the tubercles should be cut clean away with a sharp knife, and the remaining roots "puddled," as recommended, before being planted.

CARDOON.

 $(\ Cynara\ cardunculus.)$

This perennial is a native of Candia and Barbary. It is a vegetable much esteemed on the Continent, but rarely met with in English gardens. The ribs of the leaves are blanched and are very tender

when properly cooked. The Spanish cardoon is the best to grow; it has spineless leaves with large, nearly solid ribs.

Soil.—The cardoon delights in a light, warm, and fairly rich soil.

Preparing the Ground and Sowing.—If more than one row of this vegetable is desired, open trenches 18 in. wide, 12 in. deep, and 4 ft. from centre to centre, and in the bottom of these place 6 in. thick of well-rotted manure and dig it in, breaking the soil fine in the process of digging. In the middle of April in the north, and the end of the month in the south, sow the seed in patches of three in the centre of the trench at from 15 to 18 in. from patch to patch, covering the seed with soil to the thickness of 1 in. When about 3 in. high the seedlings should be thinned out, leaving only the strongest plant in each patch.

After Treatment.—The only after treatment which the plants require is to keep them free from weeds and supplied with water in the absence of rain during the summer. Towards the end of September the plants will have become fully grown. The necessary number of twisted havbands should then be wrapped round them. This should be done on a fine day when the leaves are dry. Carefully bring all the leaves into an upright position, in which they should be held by one pair of hands, while a second pair should fasten the hay-band round the bottom of the plant and wind away until the whole of the stalk is bound round and the end of the rope is fastened. The leaves should be brought closely together, but not too much compressed. When all the plants have been thus bound, earth them up till the bands are covered with the soil. which should be pressed firmly round the plant at the top to exclude air and moisture as much as possible. Of course the top of each plant should be left exposed to light and air. The plants will be fit for use in a month from the time of tying up. On the approach of severe weather they should be protected with fern or litter.

CARROT.

(Daucus carota.)

THE carrot is a hardy biennial, and is a native of Britain, where it is found wild by roadsides and on dry soils. The roots of the wild carrot are small and much forked, but that it is the parent of the numerous excellent varieties now in cultivation there can be no room for doubt.

Varieties.—1. Early Nantes Horn.—An excellent early variety of fine quality, with very small core. The roots are of small medium size and somewhat stump-rooted.

2. Intermediate Scarlet does well in shallow soils. The roots are of medium size, handsome shape, and keep well.

- 3. Matchless is a fine strain of the Intermediate type, but heavier cropping, earlier, and far superior in quality, shape, appearance, and size to the old variety.
- 4. Selected Long Red Surrey.—This is a long, handsome, fine-quality carrot for main crop.
- 5. Scarlet Perfection is a handsome variety; the roots attain a length of from 10 to 12 in., being straight, clean, and bright-red in colour.

Other good varieties are Selected Altrincham and Long Orange.

Soil.—Carrots will do well in any kind of deep, light, and moderately rich soil, but a deep, sandy loam is most suitable. It is essential to the production of clean, shapely roots that the soil should be of an open nature and free from wireworms.

Preparation of the Soil.—Dung should be trenched or deeply dug into the ground after the removal of the previous crop. This allows time for the decomposition of the manure and the absorption of the gaseous matter arising therefrom by the soil. But if farmvard manure has been given to the ground only a short time before sowing the seed, a large percentage of the roots resulting therefrom will be forked and coarse in appearance. Lime, potash, soda, chloride of sodium, or common salt, and a surface-dressing of soot may one and all be applied with advantage to the ground before sowing the crop. If the soil is of a stiff, cold nature, it should be ridged up during the autumn, so as to expose it to the weather until the middle of the following

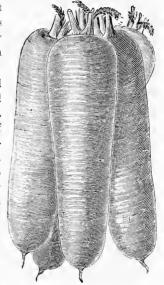


Fig. 11.
EARLY NANTES HORN
CARROT.

March, when advantage should be taken of fine, dry weather to level the ridges, adding thereto any light materials that may be at command, such as leaf-mould, wood-ashes, coal-ashes, burnt-earth, or sand. The ground having been levelled, trodden over, and raked with a coarse iron rake, enough of fresh soot may be strewn over the ground to discolour it before drawing the drills. These should be from 1 to 2 in. deep, 12 in. apart for the Nantes Horn, giving 3 in. and 6 in. more, respectively, between the rows for James' Intermediate and Long Red Surrey, and allied varieties requiring more space.

Seed and Sowing.—As early in February as the soil will work, or may be trodden on without its sticking to one's boots, a sowing of Nantes

Horn, or other approved early variety, should be made in a warm and dry rather than damp situation, making another of the same variety a month later; and a third sowing in the middle or the end of June, according as the district is late or early, should be made for drawing young during the autumn and early winter months. About the middle of March the main sowing, consisting of Long Red Surrey and Matchless, should be made. Before sowing mix the seed with dry sand. Sow thinly in the drills; then close the soil in with the feet, tread, and rake level with a fine rake.



Thinning the Plants,—As soon as a couple of inches high, thin the Nantes Horn out to 2 in. from plant to plant in the row, every alternate plant being afterwards drawn as soon as fit for use, giving 6 in. and 9 in. between the plants respectively to such varieties as Intermediate and Long Red Surrey. Advantage should be taken of showery weather to do this work. The weeds, which are sure to come up with the earrots, should be pulled up at the same time.

After Treatment.—This, in addition to keeping down weeds, will consist in making a free use of the Dutch hoe between the rows during the summer, stirring the soil to the depth of between 1 and 2 in. each time the Dutch hoe is used.

Taking up and Storing the Crop.—Towards the end of October or early in November, according to season and district, the crop should be taken up with the assistance of a four or five-tined fork, so as to lift the roots entire; the tops should then be cut off close to the crown, and the roots be stored away in the manner recommended for beet-root; and if wintered in this way there need be no fear of fermentation, as is so frequently the case where a large bulk of them has been put together, sometimes to the entire loss of the crop. Two onnees of seed will sow a drill 120 ft. long.

Saving the Seed.—In taking up the crop, select the necessary number of the finest specimens and lay them in the soil by themselves, entting off the tops at a few inches from the crown. Towards the end of February or early in March plant these roots in a row 18 in. apart in a warm situation, placing them in good, rich soil. As the umbels or clusters

MATCHLESS CARROT. of flowers successively ripen their seeds, they

should be cut off and laid in a cloth in the sun to get properly dry for rubbing out. The seed should then be cleaned, put into a bag, labelled, and put away for use the following spring. Only one variety should be saved annually in any one garden, that is, if the object is to keep it true to name.

Insect Attacks.—The carrot is subject to the attacks of several insects in soils which are annually dressed with rich farmyard manure. and which have not had a surface-dressing of fresh soot given immediately before drawing the drills for the reception of the seed. Fresh soot is not only a sure antidote for the attacks of all insects making inroads on the roots of plants, but it is also a powerful fertiliser and purifier of the soil when judiciously applied. The young plants are frequently attacked by the Carrot Plant Louse (Aphis dauci) as soon as they appear. This takes up its abode in the crown, and destroys the plants. Dusting in the early morning, when the plants are damp, with a mixture of freshly-slaked lime and fresh soot will remove it. The maggets of the Crane Fly (Tipula oleracea) also occasionally work havoc among the roots. The caterpillars of the common carrot blossom and carrot seed flat-body Moths (Depressaria applana, D. daucella, and D. depressella) do much injury to the seed crop by devouring the seeds and seed vessels. They are, however, easily shaken off, and may thus be collected and destroyed.

CAULIFLOWER.

(Brassica oleracea Botrytis cauliflora.)

The cauliflower, as also the broccoli, are said to have been introduced into England and the Continent of Europe from Cyprus, where it has been cultivated for centuries, and also from the coasts of the Mediterranean. Unprotected, the cauliflower would rarely withstand the severity of our winters, except, perhaps, in the favoured climates of Cornwall and South Devon. Like all the Brassica family, there have been many excellent varieties of the cauliflower introduced into commerce in recent years by the great seedsmen of this country, France, and Germany. Those finding most favour in this country are the following:—

- 1. First Crop.—This is a very dwarf and compact-growing variety, and for this reason the plants may be set closer than any other variety in planting. It produces few leaves and snowy-white close heads.
- 2. Early London is a strong-growing variety, producing large, close, white heads.
- 3. Eclipse is a very popular and excellent variety, being of good size, close and white.

- 4. New Kinver produces large solid heads of snowy whiteness and fine quality.
- 5. Extra Early Autumn Giant (new) is an addition to the select list of standard varieties already in cultivation. It comes in well between the preceding varieties and the old Autumn Giant, but both flower and leaf are less coarse than those of that variety.
- 6. Autumn Giant is the best, as well as the hardiest and latest, of all cauliflowers.

Other well-known varieties are Walcheren and Late Asiatic.

Soil.—A deep, sandy loam, enriched with well-decomposed stable manure, prepared in the same manner as recommended for cabbage, will be congenial to the requirements of the canliflower, and tend to the production of the best possible results, under judicious treatment, and the influence of genial weather. Early and late plantings should be made in well-drained ground; for the general planting it does not matter if it is but imperfectly drained, that is, not drained at all, as in that case the plants will stand a better chance of being uniformly damp at the roots during the summer and early autumn months, and, therefore, less liable to have their growth checked, which would result in the production of precocions and imperfectly-formed heads.

Sowing.—Seed of First Crop should be sown in a gentle heat under glass, or at the foot of a south wall or fence, as early in January



ECLIPSE CAULIFLOWER.

or February as the condition of the soil and weather will permit of its being doue. A pinch of seed of Early London, Walcheren, Eclipse, and Autumn Giant may be sown the same time, to yield a succession of cauliflower up to the autumn-raised plants the end of June, and throughout the months of July, August, and September, when the supply will be continued by plants of the last-named four varieties, raised from seed sown in a warm border, that is, a border in front of a south or west wall or fence, early in April. The last sowing will produce heads the following May and June, being made from the 20th to the 25th of August in the south and west of England and Ireland, and from ten to fifteen days earlier in the northern parts of Great Britain and Ireland.

The seed beds should be prepared, the seed sown and covered the same way as recommended for cabbage; and the subsequent treatment of the plants, from the seedling state to the cutting of the "flowers," being the same as that recommended for broccolis, it need not be again detailed. The only difference in the pricking out of the young plants resulting from the Angust or autumn sowing is, that they should be placed underneath haud-lights, or in cold pits or frames having a sunny aspect, instead of in the open.

Autumn and Winter Treatment. -The plants in these positions should be protected from frost by lights and shutters, and fern or litter in case of severe frost. They should, however, have abundance of air given them on every favourable opportunity, removing the lights and shutters in the morning, in the absence of frost or snow, and replacing them in the evening whenever frost is anticipated; indeed, it will be safer to put them on every night after the middle of October. Otherwise, a large percentage of the plants will become button-hearted before spring, that is, they will produce heads not much larger than large buttons. A dusting of soot and lime mixed should be occasionally made between the ends and sides of the frames and pits and the plants, with a view to preventing the inroads of slugs among the plants during the winter and early spring months. The attacks of mice must also be guarded against, by setting traps for them as soon as evidence of their presence is visible. A little wood-ashes and soot should be strewn over the soil before pricking out the young plants in it. will save their roots from the attacks of insects.

Transplanting the Plants in Spring.—As early in February as the weather will permit, lift the plants with a garden trowel, with little balls of earth attached to the roots, and transplant them carefully into drills 3 in. deep, 2 ft. apart, and at the same distance from plant to plant in the rows. This done, stick a spruce bough or laurel branch well in the ground at the north side of the individual plants for a few

weeks. These will save them from being injured by frosts and cutting winds until the roots of the plants have pushed into the fresh soil—until they have completely re-established themselves, when they should be removed. Another planting should be made early in March, treating the plants as indicated. Where branches and boughs of the description mentioned are not at command, it will be advisable to defer the first planting for a few weeks. In the north of England and Scotland it will not be safe to put the plants out before the second and third weeks in March.

Taking and Retarding the Crop.—The heads of cauliflowers may be cut when they are about 3 to 4 in. in diameter, and from that till they attain their full size, but before they lose their compactness. The heads should never, except in special cases, be cut before they have reached these dimensions. The "flower," as the part used is termed, should not be exposed to sunlight, as that would spoil its whiteness. When the heads or flowers are turning in too quickly, three or four of the leaves should be bent over them, as a means of keeping them back.

Saving Seed.—Seed is best preserved from autumn-raised plants. The selection of short thick-stemmed plants, having firm, compact heads, should be made the following May, treating the plants as recommended for cabbage in the same stage and for the same purpose.

Insect Attacks.—The remedy for these is the same as those prescribed for cabbages and broccolis. One ounce of seed will sow four square yards.

CELERY.

(Apium graveolens.)

This hardy biennial is a native of Britain, being found wild in marshy places and by ditches in meadow land. Well-grown specimens of the cultivated varieties are much appreciated, not only in this country but also throughout Europe. It is undoubtedly a very wholesome vegetable, and though not agreeing with some constitutions, there are persons who attribute wonderful virtues to its use—to wit, the curing of rheumatism. The following are the best varieties to grow:—

- 1. White Gem.—The sticks of this rightly-named variety are very close and firm, and edible almost to the leaf. Well-grown specimens are sweet, crisp, and possess a fine nutty flavour.
- 2. Solid White is of close habit, growing $2\frac{1}{2}$ ft. high, thick, hearts firm and solid, and good flavour. Other good white varieties are Sandringham, Incomparable White, and Matchless.

3. Standard-Bearer Red.—This is a grand variety, sometimes attaining a length of 3 ft. and upwards, and 1 ft. in circumference,

crisp and solid.

4. Major Clarke's Fine Solid Red is a good all round celery.

Matchless Red and Sulham Prize Pink are also good varieties.

Soil.—The soil which celery delights in is light. rich, and moist, rather than dry. At the same time it must not remain excessively damp during the winter, because such a soil would cause the celery to rot. A stiff and adhesive soil is not suitable for the culture of this summer, moisture-loving plant, except in the case of plantings for autumn use.

Seed and Sowing, -- Where there is not the convenience of a hot-bed in which to raise young celery and other plants, open a pit about 2 ft. square, and the same depth, in a warm corner of the garden. Fill this with short stable dung to within 4 in. of the top, and fill up with light, rich, fine soil, made level and firm with the hand. and on this sow the seed thinly, about the middle of February, covering it lightly with some of the same kind of soil, and then water gently through a fine ·



Fig. 22.

WHITE GEM CELERY.

sprayed watering pot. Place a hand-light or a square of glass over the seed bed, and eover with a mat or litter until the young plants appear, when they should be fully exposed to daylight; tilting up the glass a little on fine days to prevent the plants making a weakly growth.

Another small sowing should be made in the middle of March, and a third on a warm border a month later, without protection.

Pricking out the Seedling Plants.—As soon as the plants have made two or three proper leaves they should be pricked out about 4 in. apart

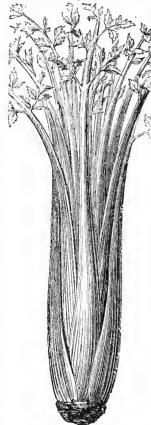


Fig. 23.

in 2 or 3 in. thickness of sifted soil, placed on a like depth of short dung, resting on a hard bottom under a south or west wall They should be dropped into holes made with a small pointed stick, the soil being pressed about the roots, sufficient water being given to settle the soil. They should then be shaded from suushine until the roots have pushed into the This may be easily done by placing a mat or cloth over a few bean-sticks supported by short forked sticks. soil should always be kept moist about the roots of the plants. As the days lengthen, and the plants increase in growth, the application of water at the roots should become more frequent.

Preparing the Trenches.—The best way to grow celery is in trenches running north and south. The width of these must be determined by the number of rows intended to be planted in each trench. The best sticks of eelery are secured by planting only one row of plants in each trench. These single-row trenches should be 4 ft. apart from centre to centre, at least 12 in. deep and 16 in. wide; the soil taken therefrom being formed into a ridge between the trenches, on each side of which a couple of rows of lettuce may be grown during

STANDARD-BEARER CELERY. the interval from opening the trenches to the general earthing-up of the plants. Into each of these trenches dig 6 in. deep of the best manure at command, breaking the soil fine as the work of digging is proceeded with.

Transplanting.—The plants having been pricked out in soil prepared in the manuer recommended above, will lift with nice balls of earth and short dung attached to the roots. These should be set 9 in. asunder along the centre of the treuch, planting them therein with a garden trowel and making the soil firm about the roots with the hands, giving water immediately afterwards to settle the soil round the roots.

Advantage should be taken of showery weather to transplant these and all other plants, as they then experience little, if any, check. As soon as the plants, from any or all the sowings, have attained to a height of 3 or 4 in. they should be transplanted in the manner just described.

Earthing up the Plants.—When the plants have made from 12 to 15 in. of growth they should be earthed up. This is how the operation is done. The soil is cut down a little from the ridge on either side the plants, the leaves are then drawn together, in an upright position at the top, and held with one hand while the loosened soil is drawn up and pressed round each plant with the other hand, up to within a couple of inches of the beart or top of central leaves; taking particular care not to let any of the soil get into the heart of the plants in the process of landing them up, as this would spoil the heads or sticks of celery. By allowing the plants to reach the heights mentioned before earthing them up, labour is economised and the chance of the soil getting into the hearts is lessened, while the primary object of earthing up-blanching the head-is secured as completely as by carrying out the operation at shorter intervals. It is not only a waste of labour to earth the plants up when about 6 in. high, as is frequently done, but the risk of getting soil into the hearts is thereby increased. The last earthing up of the plants should be done before frost sets in. In the event of the weather being severe, the tops of the plants should be protected by a sprinkling of fern or straw. should be removed in mild weather and returned when necessary. is almost impossible to keep celery plants too moist during the summer and early antumn; therefore copious supplies of water should be given at the roots during hot weather, or a large percentage of the plants will "bolt," i.e., run to seed.

To Save Seed.—Whenever it is necessary to save seed it is advisable to plant a short row for this purpose of the variety selected. These plants need not be earthed up high, but should be protected in severe weather. About the middle of February transplant into a sunny situation, giving water at the roots, and supports to the flower-stems as required. The seeds ripen in autumn, when they should be rubbed out, cleaned and stored. The seed keeps good for three or four years, but new seed germinates best, and when the old and new are mixed, as is sometimes the case in the trade, they do not come up regularly. One ounce of seed will sow an area of four square yards.

Insect Attacks.—The Celery Fly (Tephritis onopordinis) lays its eggs in or upon the leaves of the plants, and the larvæ produced feed upon the soft green matter (parenchyma) of the leaves, forming large blisters or hollow gatherings within the leaf. These maggots are found from June to November, and the only way of preventing their spreading is to pinch the blisters as soon as they appear, cutting off and burning all

the affected leaves that can be removed with safety to the plant. A mixture of fresh soot and lime dusted over the plants while damp is a good remedy for most insects which attack the leaves.

Turnip-Rooted Celery.—This is much prized in France and Germany as a cooked table vegetable. Unlike the common celery, the stem, instead of forming a mere extension of the leaves, develops into knobs, weighing from 1 to 5 lbs. each. This is sometimes sliced and used as an ingredient in salads. It is much more hardy than the ordinary celery, and its roots can be taken up and stored out of the reach of frost. plants can be raised in the same way as the ordinary celery, and the young plants treated in the same way as recommended above. At the beginning or middle of June the plants should be planted out in a piece of moderately rich and rather sandy soil, in rows 18 in. apart, and the plants set 1 ft. asunder in the row. Before planting, all the side shoots, and some of the outside leaves, and the side or branching fibres on the roots, should be removed. The plants should be set shallow, the roots being scarcely so deep-placed in the ground as they had previously been. During growth a little of the soil should be drawn from around the bulbs once or twice, and all lateral or side fibres removed. When nearly full-grown the bulbs should be covered with a little soil in order to bleach them.

Taking the Crop.—The roots will be fit for use in September or October. Before severe frost sets in the erop may be taken up, divested of all the foliage except the heart leaves, and be laid in a dry border in front of a south wall or fence in the same manner as recommended for beet; burying the bulbs about an inch underneath the soil, and protecting them with fern or litter when considered necessary.

CHERVIL.

(Anthriscus cerefolium.)

This annual plant is a native of the Continent, and is cultivated for the leaves, which, in a young state, are used in salads and to flavour soups. The varieties grown are:—

- 1. Common or Plain Leaved; and the
- 2. Curled Chervi

The latter variety, owing to its beautifully curled, pale-green leaves, is also useful for garnishing purposes. Chervil will flourish in any kind of light soil and warm situation.

Seed and Sowing. —A pinch of seed should be sown either broadcast and lightly raked in, or in drills about 1 in. deep and 8 or 9 in. asunder,

closing in the soil with the feet or rake afterwards. If a constant succession of tender leaves is required, successional sowings should be made every three or four weeks from the beginning of March to the end of September. The summer sowings should be made in a somewhat shady situation, making the last couple of sowings in a position fully exposed to the south or west. Water should be given at the roots in dry weather.

Bulbous Rooted Chervil (Cheerophyllum bulbosum) is a hardy biennial, a native of the Continent and Europe. It produces fusiform or spindle-shaped roots, not unlike a small parsnip, and about the size of an Early Horn carrot, the flesh being of a yellowish white, farinaceous, or mealy, sweet, and characteristic flavour. It is said to be more farinaceous than the potato, and more like the sweet chestnut.

As the seeds often perish in the soil in winter, if sown in August and September, the proper months for sowing in the ordinary way, it is a good plan to stratify the seeds soon after they are gathered in the autumu. This is done by putting a layer of sand in a good-sized flowerpot, the hole in the bottom being corked up, then a layer of seed, then one of sand, and so on, alternately, till the pot is filled. It should then be plunged in any spare corner, out of the reach of frost, until the end of the following February, when the seed may be sown either broadcast or in shallow drills in any good garden soil, allowing from 9 to 12 in between the drills, covering the seed lightly with fine soil. When the leaves become withered in July, the roots will be fit to take up. Like potatoes, they should be kept in the dark and dry. The produce from fairly good ground is about 70 lbs. per square pole or perch.

CHICORY.

(Cichorium Intybus.)

CHICORY is a native of Britain, where it occurs in a wild state by roadsides. When cut young the leaves make a somewhat bitter but wholesome small salad, and when blanched the leaves constitute an excellent winter salad, which is known to the French by the name of barbe de capucin. Near Paris the large, fleshy roots are grown extensively for mixture with coffee. The roots are cut into tiny pieces, dried on a kiln, roasted, ground, and then mixed with the coffee. When the heads are stewed, and served with melted butter, they resemble seakale. It is important to grow carefully-selected seed if good roots and leaves are required for the winter and spring months. The best varieties of ehicory to grow are:—

- 1. Crimson-flaked.
- 2. Witloof Chicory, or White-leaved Chicory.

Soil. —A deep, light, and ordinary rich soil is suitable to the growth of chicory. The soil, having been previously dressed with well-decomposed manure deeply dug into it, should be firmly trod and raked level preparatory to drawing drills between 1 and 2 in. deep, and from 12 to 16 in. apart, running north and south.

Sowing.—This operation may be performed any time between the middle of April and the end of May, weather permitting. The seed should be sown thinly in drills, prepared as described; the soil closed over it in the ordinary way, trodden, and raked. The roots will, if well cultivated, attain the size of moderately large parsnips. The plants should be thinned out to about 9 in. from plant to plant in the row. The only after treatment necessary between sowing and thinning the crop and the taking of it up being rigorous weeding and stirring of the soil between the rows three or four times during the months of July, August, and September.

Storing and Forcing.—When the large leaves of the plant have decayed, towards the end of October or early in November, according to the season and locality, the roots should be carefully taken up with a fork, being careful not to injure them. They should be laid in trenches the same depth in the soil as they were when growing, under a north wall or fence, to prevent further growth. Ten or fifteen days before blanched heads of chicory are required for use, the roots should be packed in an old or specially constructed box in light mould, watered. and then be placed in a perfectly dark place, such, for instance, as a mushroom-house, cellar, or shed from which frost and daylight can be excluded. In planting, the crowns of the plants or roots should be 1/2 in. above the surface. Successive batches of roots should be put into force, as indicated, every week or ten days, according to the demand. When the leaves have made a growth of from 9 to 10 in. they will be fit for use; the same roots, if allowed to remain in the boxes after the first crop is taken, will produce a second, though less abundant, crop of blanched leaves. A simple, and at the same time effectual, way for producing a supply of blanched chicory leaves during the winter and spring months is to secure a number of wooden troughs, about 12 in. deep and the same width, and to fill a few of these at intervals of ten or fifteen days, during the winter and spring months. with roots in the same manner as described above, allowing a space of about 3 in. between the crowns of the roots in the boxes, inverting boxes of similar dimensions over them. These, being placed in a sunny situation, should then be covered with clean and slightly fermenting leaves to the thickness of 24 in. Thus treated, good specimens of blanched chicory leaves may be cut in a fortnight's time after the date of covering. If a supply of chicory is required as an ingredient for

small salad, it may be had all the year through by sowing, at intervals of three weeks, in open borders from April to the middle of October. The early and later sowings should be made in a warm situation; the midsummer sowings in a rather cool and moist situation. The supply during the interval from October to May being obtained from blanched leaves, as above. When chicory is grown according to this system the seed should be broadcasted thickly. Watering in dry weather is all that is required till the plants are fit to cut, which should be done as soon as they have made the first three or four leaves.

Saving Seed.—To save seed, plant a few roots in a warm situation about the middle or end of February. These will flower towards the end of July or early in August, and ripen their seed a month or six weeks later. The flowering stems should be supported by sticks.

CHIVES.

(Allium schænoprasum.)

This very old-fashioned and well-known hardy perennial plant is a native of Britain. It is grown for the leaves, which, being cut close to the ground and chopped into small pieces, are used in salads and soups instead of young onions. Although chives will flourish almost anywhere, they prefer a light, rich, warm soil, and an open situation. Although they will grow fairly well for ten or more years in the same spot, it will be advisable to shift them every five or six years. The plant is propagated by dividing the roots either in March or September, and planting them in small tufts, 6 or 7 in. apart, in rows from 10 to 12 in. asunder; giving water at the roots to settle the soil about them if the weather should be dry. The plant is a very rapid grower, and soon forms large masses of leaves, which the oftener they are cut the more tender they become.

CORN SALAD, or LAMB'S LETTUCE.

(Valerianella olitoria.)

This is a very useful and hardy salad vegetable, furnishing a good substitute for lettuce, but sometimes used in preference to the more popular salad plant. It does well in any light garden soil, in a border with a south or west aspect. The ground, having been dug, should be trod, raked level, and the seed sown thinly in drills about 1 in. deep and 12 in. asunder, afterwards closing the soil in with the feet, treading, raking level, and watering if necessary. The plants should be thinned out to 6 in. in the row, afterwards cut every

alternate plant close to the ground, as required for use. The thinnings may be transplanted to extend the crop. One ounce of seed will sow a drill fifty or sixty yards long.

CRESS, AMERICAN.

(Barbarea præcox.)

This, notwithstanding its generic name, is a native of England. It is a perennial plant, growing naturally by the sides of brooks. It prefers a light, moist soil. It is raised from seed, which should be sown the end of August or early in September for winter and spring use. The seed should be sown thinly, in drills 1 in. deep and 9 in. apart, closing in the soil, treading, and raking it over afterwards in the ordinary way. The young plants should be thinned out to 4 or 5 in. in the row. The leaves are used for the same purpose as those of the common garden cress. If required for summer, it may be sown in a shady spot in May and July.

CRESS, GARDEN.

(Lepidium sativum.)

This hardy annual, although said to be a native of Persia, has been cultivated in this country since the year 1548. There are five or six varieties of cress enumerated in catalogues, but the plain and curled, or Normandy cress, are the two varieties generally grown.

Seed and Sowing.—Sow thinly at intervals of a fortnight from March to September in a moist, shady situation. The seed may be sown either in small patches about 16 in square or in short shallow drills from 4 ft. or upwards in length, according to requirements. A board or a mat placed over the seed will hasten the process of germination, but should be removed as soon as the plants appear.

CRESS, WATER.

(Nasturtium officinale.)

This hardy perennial is a native of Britain, where it is found growing in ditches and small streams. It is said to possess antiscorbutic properties. It is easily raised from seed sown in a moist ditch, or by divisions of the roots; the latter being the general and most expeditious method of propagation. Two onnces of seed will sow an area of three square yards.

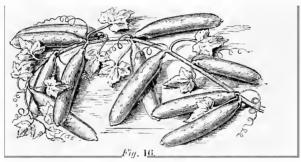
CUCUMBER, RIDGE.

(Cucumis sativus.)

THE encumber is supposed to be a native of Asia. It was cultivated and in general use in Egypt in the earliest ages.

Soil.—Three parts of light loam and one of well-rotted manure or horse-dropping, well-mixed, suit the encumber admirably. The best varieties of ridge encumbers to grow are:—

1. King of the Ridge.—This attains to a length of from 12 to 15 in. It is straight, is not ribbed, is very productive, and of excellent flavour.



KING OF THE RIDGE CUCUMBER.

2. Improved Stockwood Long Ridge is a much-esteemed, robust-growing, and very prolific variety, producing smooth, straight fruit from 12 to 16 in. long.

Long Prickly is also a good and well known variety. Short Prickly is very hardy, an abundant bearer, and useful for pickling.

Cardiff Castle, Rochford, and Telegraph are the best to grow in frames and houses.

Preparing the Ridge.—Open a trench about 3 ft. wide and 2 ft. deep, fill this with hot dung and fermenting leaves thrown together in a heap a fortnight previously, and turned twice to allow of the rank steam escaping. This should be trodden firmly together. Then fix the position of your plants with sticks placed 5 ft. apart in the centre of the ridge, and deposit at these points about 9 in. in depth of prepared mould, spreading it about 1 ft. around each stick. Place on these 2-ft. circular spaces of soil the necessary number of hand-glasses, in which to raise and subsequently grow the plants for the first four or five weeks. The remainder of the trench should then be filled up with the excavated soil.

singly in 3-in. pots three pft. wild ed with light, rich soil—to raise the desired number of plant arch hand-glass. Cover the seed with





1/2 in. of soil, water, and plunge the pots to the rims in the soil in one of the hand-lights prepared as recommended above. When the plants are about 2 in. high, fill the remaining portion of the pots up to within $\frac{1}{2}$ in. of the top with a little of the soil taken out of the hand-light, which will be the same temperature as that in which the plants are growing, pressing it gently about the roots, and give tepid water at the roots when the soil becomes dry on the surface. The hand-glasses should be covered at night with mats and a little dry litter or fern until the end of April, when the mats will be sufficient, and these may be dispensed with three weeks later. When the plants have made three rough or perfect leaves, they should be stopped by pinching off the tops of the shoots.

Planting.—As soon as the cucumbers have partly filled the pots with roots, they should be planted one in the centre of each light, and the same depth as they had been in the pots, pressing the soil about their roots and giving a little tepid water to settle the soil. They should be shaded from sunshine with a mat or a large leaf of rhubarb until the roots have taken to the new soil, after which a little air should be given during the heat of the day. The handlights should be closed quite tight at about 2 o'clock in the afternoon, after syringing or damping the plants lightly with a fine-rosed wateringpot, using slightly warmed water for the purpose. This promotes a growing leat in the lights. They should only badamped on bright, sunny days

ring and Stopping the Plants.

from the first stopping of the plants, regularly over the bed; at the same time placing three brickbats underneath the hand-lights to allow of the shoots extending outside their limits. When these shoots have attained a length of about 18 in., pinch off the points. This will cause one or two cucumbers to set on each shoot and side shoots to push forth. The shoots should be stopped at one joint beyond the fruit. About the middle or end of June the hand-lights may be removed.

Thinning the Shoots.—Avoid crowding the shoots and over-cropping the plants as the worst evils in cucumber culture, or, for that matter, in the culture of fruit-bearing plants of any description. Therefore, keep the shoots well thinned and stopped, and remove all bad leaves as soon as they appear on the plants. The plants should be kept moist at the roots. The cucumbers should be cut before they become overgrown or lose the dark-green colour, which generally indicates crispness, and be placed on end in a saucer containing $\frac{1}{2}$ in. of water in a cool room or cellar until required for use.

ENDIVE.

(Cichorium endivia.)

This hardy annual is said to be a native of the East Indies. The fact that it can be had at a time of year (winter) when salad ingredients are scarce enhances its value considerably. There are several varieties of the curled (C. E. crispa) and broad leaved (C. E. latifolia) forms now in cultivation. The best are:—

- 1. Extra Fine Green Curled.—This is the finest known type of curled endive, and is very ornamental.
- 2. White Curled.—Leaves 7 to 9 in. long, wide, open heart, growing flat on the ground. It is best cut young for salads.
 - 3. Moss Curled.—Leaves small and very finely cut and curled.
- 4. Broad-leaved Batavian.—Leaves long and broad. It requires to be tied up for blanching.
- 5. Curled Batavian.—The leaves are not so long nor so broad as those of the preceding variety; but they are, as the name implies, curled at the edges.

Soil.—Any rich soil, providing it is light and rests on a gravelly subsoil, and be away from the shade of trees, will suit the requirements of endive.

Sowing.—A small sowing may be made the middle of May, another (main sowing) the middle of June, and again a month or six weeks later for the winter crop. Plants raised in May or June, if not kept uniformly moist at the roots, are likely to run to seed. The seed should be sown thinly in beds 4 ft. wide, covering lightly, and afterwards,

raking the surface of the bed level, and watering through a finerosed watering can, in the event of the weather being dry, and until the plants appear.

Transplanting.—As soon as the plants have made 3 in. of growth they should be carefully taken up, while the soil about the roots is moist, and be replanted—the curled-leaved varieties—in rows 12 in. apart, and the same distance in the row; setting the plants in each succeeding row alternately to those in the adjoining rows; giving 3 in. more each way to Batavian plants. In planting, make the soil moderately firm about the roots; taking care not to bury the heart leaves, or let the soil into them in the process of planting. When the planting is completed, give sufficient water to settle the soil about the roots, repeating the application at short intervals (daily) until the plants have established themselves. If the planting is done in showery weather, it will not be necessary to give water.

Blanching the Plants.—In ten or twelve weeks from the time of sowing, the plants will nearly bave attained full size, and will be ready for blanching. This operation is accomplished in various ways. Generally, the leaves are brought together and tied up near the top with bands of matting, putting an additional tie round the middle a week or ten days later. The leaves should be quite dry when tied up, and should occasion arise for giving water to the plants after they have been tied up, it should only be given at the roots. avoiding wetting the leaves. The plants may also be blanched by placing inverted flower-pots over them, covering the hole in the bottom with a little moss or piece of slate; or by placing boards on each side of the row of plants, leaning their upper edges against each other so as to form a roof, and excluding the light at the ends with pieces of board or slate. Endive for standing the winter should be planted at the foot of south or west walls or fences, where they can be easily protected during severe weather by a sprinkling of fern or long litter. Sufficient plants to afford a supply for a week should be covered at one time. The time necessary to effect blanching varies from ten days to three weeks, a longer period being required for effecting the process in winter than in summer. when growth is rapid.

To Save Seed.—Select a few of the finest specimens of the autumn-raised plants, protected through the winter, and plant them out in a warm situation early in March. Tie the flower-stems to stakes or strings twisted round a few upright sticks to prevent them being broken by the wind. The seed will not ripen at one time, and must be gathered at intervals. It should be spread out on a cloth for a few days to dry, when it may be rubbed out, cleaned, and put into a bag or bags for future use. It remains good for five years. One ounce will sow four square yards,

GARLIC.

(Allium sativum.)

Is a hardy perenuial, and a native of Sicily and the south of France. It is grown for the bulbs, which are used in stews, soups, &c., but not so generally in Britain as in Spain, Germany, Italy, and the south of France, its strong flavour and clinging aroma causing it to be sparingly used in high-class cookery.

A light, rich soil is most suitable for the growth of garlic. It is propagated by separating the cloves of the bulbs, and planting them 6 in. asunder in shallow drills from 9 to 12 in. apart, towards the end of February or early in March, barely covering the top or apex of bulbs with soil. When the leaves turn yellow, towards the middle or end of July, the plants may be taken up and put to dry in the sun for a few days, when they should be tied up by the stalks in bunches, and suspended in a dry shed out of the reach of frost. The bulbs may also be spread out on a shelf in a dry room.

GOURD.

(Cucurbita.)

The species and varieties of gourd are numerous; they are natives of the warm parts of both hemispheres, and especially in India. They may be described as half-hardy annuals. The varieties cross readily with each other; therefore it is almost impossible to keep any one variety distinct, if others are growing close by and flowering at the same time. The varieties mostly cultivated are:—

- 1. Large Yellow Gourd (Cucubita maxima), the largest variety in cultivation, one having been found to weigh 240 lbs. This specimen was produced in Devonshire. The stems are thick, running along the ground 20 or 30 ft., if not pinched, and taking root freely at the joints. The leaves are very large. This gourd is only fit to use when fully matured.
- 2. Egg-shaped Gourd is excellent in a ripe state, cooked as a vegetable. Flesh firm and red, with a hard, shelly skin. It is a very free grower, and highly prolific.

Large Green, Ohio Squash, and Mammoth are also good varieties.

Soil.—The richer the soil in which the gourd seedlings are set, the better will be the crop secured. Indeed, the largest and finest fruits I have ever seen were taken off plants placed in a barrow-load of good loamy soil placed on top of an old hot-bed, into which the roots pushed freely in search of sustaining food and moisture. I have

also known most satisfactory results to be obtained from plants set on a few barrow-loads of soil deposited on a rubbish-heap, which had been turned over once or twice previously and made level on the top.

Seed and Sowing.—Seed should be sown in a gentle heat, early in April, and grown under a hand-light or frame, transferring the plants to the ridge or bed about the middle or end of May, and protecting them from frost and cutting winds by means of a few spruce or other boughs stuck round the plants. These will also shade them from the sun until the roots have got hold of the soil, when they may be dispensed with. If hand-glasses are at command, the plants, as a matter of course, will do much better underneath them than would otherwise be the case. Plants may be raised from seed sown in May in the open ground; but such plants are late in coming into bearing.

After Treatment.—The plants should be pinched when they have made three rough or perfect leaves; afterwards stopping the side shoots, resulting from the first stopping, at one joint beyond the fruit blossom, which will be about 3 ft. from the main stem; allowing a like growth to be made before repeating the operation. Keep the shoots properly thinned out; also, where too many blooms have set to attain to due dimensions the young fruit should be removed. Plants growing upon dung beds, as indicated, are not likely to suffer from want of moisture at the roots, but, where not so grown, water should be freely given at the roots in dry weather.

Insect Attacks.—Should mildew attack the plants, dust over the leaves while damp with flowers of sulphur. This disease attacks the plants during excessively damp and cold weather, and sometimes during seasons the reverse of this, through the soil being allowed to become too dry. If fly or Aphis infest the plants, they should be dislodged by syringing them with soapy water after the sun has gone off the plants in the afternoon. These remedies are also applicable to cucumber plants similarly affected.

HORSERADISH.

(Cochlearia armoracia.)

HORSERADISH has long been associated with the roast beef of old England. It is a hardy perennial, and is indigenous to or naturalised in Britain. It is grown for its underground stems. It is antiscorbutic, and so important for a maritime nation, as the roots may be kept fresh for several weeks, indeed, for months, by burying them in sand or damp moss, or even by wrapping them up in a damp cloth or skin.

Soil.—The finest sticks of horseradish are secured from plants set in a deep, well-manured soil, not under the shade of trees, as is too often

the case, but in an open situation. This root, like many other plants, if worth growing at all, which it undoubtedly is, is worth growing well. Therefore, a planting of it should be made every year in December or early in January.

Preparing the Soil.—Open a trench 2 ft. wide and 18 in. deep, which fill up and raise to the height of 18 in. from the ground line with well-rotted dung and leaves, or, failing the leaves or leaf-mould, dung and light garden soil well mixed, treading the whole well together, as the ridge is being made into the required shape. Then put the line down 6 in. from either side of the ridge, and cover with soil, thus making a ridge 18 in. wide on the top, with the centre 3 in. lower than the sides and ends, thereby forming a sort of trough for the water.

Planting.—Having taken up part of the old plantation to select roots from for making the new, select the second-sized roots from 15 to 25 in. long, having every little rootlet the entire length rubbed off, by drawing the roots through the closed hand, holding a piece of rough cloth; then plant them in their entirety, with a long dibber or pointed stick, in two rows 1 ft. between and about 18 in. apart in the rows, and slanting slightly towards the interior, with the crowns about 1 in. under the surface. A plantation should be made every year in proportion to the quantity of horseradish used, so as to always have a good supply of it—good in quality as well as quantity. Good specimens of horseradish may also be obtained by planting roots prepared as described in holes made with the crowbar in deep, rich soil, filling in the holes with a little fine mould after setting the roots.

JERUSALEM ARTICHOKE.

(Helianthus tuberosus.)

This hardy tuberous-rooted perennial is a native of Brazil. It really is not an artichoke, and it is only so called on account of its resemblance to that root in flavour, and not because it belongs to the same family. Neither is its uame derived from the city of Jerusalem, the word in this case being only a corruption of the Italian name Girasole. The tubers are baked, roasted, or boiled, and served with milk or butter, and in many other ways.

Soil.—The Jerusalem artichoke will succeed in any kind of soil, but, in common with many other roots, it does best in a rich, sandy loam away from the shade of trees. The stock is increased by planting small entire tubers or sets from larger ones, furnished with a couple of eyes each.

Preparing the Ground and Planting.—The ground should be deeply dug and, if necessary, liberally manured, but if the ground has been

well manured for the previous year's crop it need only be dug, as an additional dressing so soon after would have a tendency to produce an undue amount of stalk at the expense of the tubers. The tubers or sets may be planted any time between the middle of January and the end of February in suitable weather. They should be planted 5 or 6 in. deep in rows at from 2 to 3 ft. apart and 1 ft. asunder in the rows; afterwards closing the soil over the tubers. The rows should run north and south to admit of the sun's action between the rows.

The after treatment consists in keeping the beds free from weeds by running the Dutch hoe between the rows occasionally until storing time in November. Although the roots are safe from frost, and will remain fresher in the ground during winter, it will be necessary to lift a portion of the crop for immediate use in case frosty weather should set in. The remainder of the crop should be lifted early in spring and be stored away in a pit similarly to potatoes; or in a cool shed, covering the roots to preserve their freshness. The tubers should be taken up with a fork in preference to a spade, care being taken in digging them to remove all the tubers, or they will spring up in the succeeding crops.

Insect Attacks.—The only insect known to be injurious to this plant is the Jerusalem artichoke Aphis (*Rhizobius helianthcmi*). It feeds upon the tubers, but is only found in small numbers, and does little, if any, damage. Half a peek of small artichokes will plant a row from 40 to 50 ft. long.

KOHL-RABI.

(Brassica oleracea caulo-rapa.)

This plant is much cultivated in Germany, and is now grown more or less in some English gardens. The upper part of the stem swells into a round mass. Kohl-rabi is very hardy, not being affected even by severe frost, and it withstands drought better than the turnips.

Varieties.—There are five or six known varieties of the kohl-rabi cultivated. These include White Kohl-Rabi, Purple Kohl-Rabi, and Early Dwarf Kohl-Rabi. Full-grown bulbs of the first named attain to a weight of from 8 to 10 lbs. each.

Sowing.—Kohl-rabi may be sown thinly in a well-manured piece of light ground in drills about 1 in. deep, and from 12 to 15 in. apart, and in due time thin the young plants out 9 in. apart in the rows. The only after enlitivation necessary is to keep the plants free from weeds, and to stir the soil between the rows with a Dutch hoe a few times during the summer months. The crop will be fit for use when the bulbs have attained to the size of from 2 to 3 in. in diameter. The

kohl-rabi very rarely suffers from the attacks of insects. One ounce of seed will sow four square yards.

LEEK.

(Allium porrum.)

Is a hardy perennial plant, said to be a native of Switzerland, and was grown in this country before the year 1562. The leek is not so much appreciated in the southern parts of England as it is in the north, and in Scotland and Wales. There are several excellent varieties of the leek in cultivation, the best being:—

- 1. Prizetaker.—With good cultivation this variety attains an unusually large size; being thick, pure white, very mild, and agreeable in flavour.
- 2. Improved Musselburgh A very large and hardy variety, the stems being long, thick, and white.
- 3. London Flag.—Tall, with a thick stem and broad leaves, a very good old variety, and extensively grown by market gardeners.

Other good varieties are The Lyon, Ayton Castle, and Carentan.

Soil.—A light, sandy loam, enriched with good farmy ard manure, is, in connection with good enlivation, capable of producing the very best results in weight and quality of crop.



Fig. 18.
PRIZETAKER LEEK.

Preparing the Ground.—The ground should be deeply dug, and, as indicated, well manured, breaking the soil fine in digging.

Sowing the Seed.—Two sowings may be made, one at the end of February and the other at the end of March, in warm situations. The seed should be sown thinly broadcast on a seed bed prepared in the usual way, and covered lightly with soil taken from the alley, and broken fine before being scattered over the bed. It should then be raked level, patted with the back of the spade to compress seed and soil, and protected from birds with a piece of garden retting.

Pricking out and Transplanting.—The young plants should be pricked out 2 in, apart in a warm corner before they become crowded in the seed bed, the soil being moist about the roots before drawing the plants. In pricking out and transplanting the roots of the plants should be brought together in one hand, and then be shortened back with a sharp knife to within 1 in. or so of the bulb. If the weather should be dry at planting time, give some water at the roots immediately after planting, and more or less frequently for a few weeks afterwards, according to the condition of the weather and the nature of the soil; but when it can be done without having to keep the plants too long in the seed or nursery beds, dull, showery weather should be chosen for the transplanting of leeks, like all other plants. In planting in hole at from 6 to 9 in. from plant to plant in ground of the description and prepared as indicated above, so long as the tops of the plants show above ground, it does not matter, as they will push well into growth as soon as the roots take hold of the soil, which they will speedily do, a little fine soil having been worked into each hole with the setting-stick in planting to cover the roots, the entire space round the individual plants being filled in in due time in the process of hoeing and by the force of the rains.

After Treatment.—If the leeks are planted in trenches like celery, they should be earthed up once or twice during the summer months to blanch the stem, while those planted in deep holes as indicated will thereby become thoroughly blanched up to the heart leaves of the plants without drawing any soil up to them for that purpose above ground. The leeks will be fit for use from September to spring, the plants raised from last sowing continuing the supply to the end of April, when the remaining portion of the plant should be taken up and planted closely together the same depth as before in a border having a north aspect, so as to prevent them from running to stalk.

Seed.—A few of the finest specimens and most vigorous-growing plants should be taken up early in March and planted in a warm situation, sheltered from the north, giving water at the roots when planted, and subsequently supporting the flower stems by tying them to stakes stuck firmly in the ground. When the heads of seed turn brown in September, they may be cut off with stems 7 or 8 in. long, and half-a-dozen tied together, and be suspended for a few months in a dry, airy shed, afterwards rubbing out the seed, cleaning and storing it away in a bag. It will retain its vegetative powers for three years. One ounce of seed will sow two square yards.

LETTUCE.

(Lactuca sativa.)

EVER since 1562 has this hardy annual been cultivated in the gardens of Great Britain and Ireland. The lettuce is a native of Asia, but of what

particular part of that continent is uncertain. The inference to be drawn by the names of several varieties is, that they have come from the Levant and the Greek Archipelago. The several varieties now in cultivation belong to two classes: those having round, depressed, spreading heads are called cabhage lettuce, and those of oblong form and erect growth are known under the name of cos lettuce, and under these respective headings we shall speak of them.

Cos Lettuce.

- 1. Giant White is a grand variety for summer cultivation; no tying required; heads very solid, and crisp eating.
- 2. Kingsholme is a popular and very excellent variety for late summer and autumn use.

Other good summer varieties are Paris Green and Paris White.

- 3. Leviathan is the best winter and spring cos lettuce in cultivation. The leaves are broad and of a brown shade on the outside of the plants, but the hearts are beautifully golden and tender; it is an improvement on the Bath Cos.
- 4. Hardy White is indispensable for winter and spring cultivation.



Fig. 19.
GIANT WHITE COS LETTUCE.

CABBAGE LETTUCE.

- 5. Giant. -This is a very large and excellent lettuce, the heads being crisp and white.
- 6. Tom Thumb.—This, as the name implies, is a dwarf compact-growing variety, and therefore may be planted closer to one another than any of the other varieties described in this work.
- 7. Favourite is very distinct and handsome, good for summer and autumn use. The head of fringed leaves is crisp, tender, and solid; usually grows to a large size, and remains good for a long time without running to seed.
 - 8. Grand Admiral. Medium-sized heads, solid and crisp.
- 9. All the Year Round is another excellent summer lettuce, of compact habit.

- 10. Marvel (or Red-edged).—This is a beautifully curled variety; the outer leaves are edged with dark crimson and the hearts are of a pale golden tinge. It is very crisp and sweet, and stands well during dry weather, and is invaluable for autumn sowing.
- 11. Immense Hardy Green is also a most desirable variety for autumn sowing for standing through the winter.

Soil.—The lettuce will do well in any ordinary good soil, inclining to be light rather than heavy in texture; and for early and late plantings a warm and rather dry situation is preferable to a cool moist one, but for summer and early autumn sowings and plantings these conditions should be reversed, as the plants will then grow better and be less liable to run to seed than they would if planted in a sunny aspect and a rather dry, light soil. If the ground is not naturally rich it should be liberally dressed with well-rotted manure.

Preparing the Ground.—The manure should be dug into the ground a good spit deep some time before setting the plants therein, when it can be conveniently done, treading and raking it over immediately before sowing and planting. But very good results can and are annually secured by planting the ground the same day it is dug.

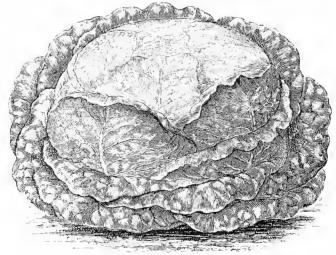


Fig. 20.
GIANT CABBAGE LETTUCE.

Seed and Sowing.—If a small frame is at command it should be placed on a gentle hot-bed, composed of dung and leaves (about three parts of the latter to two of the former), which should have been mixed and turned over once or twice a fortnight previously. This should be made about 4 ft. high at the back, and 6 in lower in front,

in a dry situation, i.e., where there is no possibility of water lodging, facing the south and sheltered from the north by a wall or fence of some sort. After the frame is placed on the bed put sufficient dung and leaves inside to raise the bed all round up to within 9 in. of the top, following this with 5 in, thick of light soil, with which a few shovelfuls of fresh soot, if to be had, should be mixed, with a view to purifying the soil rather than enriching it; make this level and sow thereon a pinch of White Cos and Favourite Cabbage, to which, if more varieties are desired, may be added Paris Green Cos and Grand Admiral Cabbage. A pinch of seed of cauliflower, cabbage. Brussels sprouts, &c. may be sown at the same time, devoting to each sort and variety a space of from 9 to 15 superficial in., according to circumstances. Cover the seed lightly, to the thickness of nearly in., with fine soil, patting it with the back of the spade or shovel. Keep the frame close, covering the sashes at night with mats, fern or any dry litter that may be at hand. Early in February will be soon enough to make this sowing. As soon as the little plants appear sufficient air should be given to prevent them from making a weakly or spindly growth, increasing the amount of air admitted to the frame as the time for pricking the plants out under hand-lights or in a warm border (under the protection of a mat or piece of canvas at night) approaches. Where the frame or hand-light accommodation do not exist the seed should be sown in a warm corner out of doors at the time indicated in the ordinary way, and in order to ward off the attacks of chaffinches and other birds, cover with a piece of garden netting, kept a few inches above the ground by means of forked sticks. The plants resulting from this sowing will in due time succeed those raised from seed sown about the middle or 25th of the previous August. second sowing should be made the middle of March, a third the second week in April-this time sowing as many of the summer varieties as the cultivator may have on a border having a west aspect; the first and last weeks in May, and again the third week in June, successional small sowings should be made. The June sowing, as well as one made the end of the second week in July, should consist of such varieties as Paris Green Cos, Leviathan Cos, Kingsholme Cos, and Marvel (or Red edged) Cabbage. The plants raised from these sowings will come in for use in antumn and early winter. The last sowing, to produce plants for use in eool pits under glass in February and March, and in warm borders outside, in April, May, and the first week or two in June, should, as stated above, be made from the middle to the 25th of August. This should consist of Improved Black-seeded Bath Cos, Hardy White Cos, Immense Hardy Green Cabbage. and Marvel Cabbage.

Pricking out and Transplanting the Plants. -Repeating our instructions respecting cabbage and other plants, as soon as the seedlings are large enough to handle they should be pricked out, those from the early and late sowings in cold pits and dry, sunny borders, where a little protection of some kind can be given the plants when necessary, in rows 3 or 4 in, apart and at the same distance from plant to plant in the rows, other sowings being pricked out in west borders and in open situations during the summer months. If this operation can be carried out in dull, showery weather, so much the better will it be for the plants. But if, in waiting for the arrival of such favourable circumstances, the plants for pricking out, as well as those for transplanting in the open, are likely to get "crowded," they should be set out before that very undesirable mark of neglect is reached, and be watered at the roots then and afterwards, in the absence of rain, to insure a quick and crisp growth. If the ground is ready by the time the young plants are fit for pricking out, they may be transplanted at once in rows 12 in. apart and at the same distance in the rows, giving water through a rosed watering-can to settle the soil about the roots. The ground having been previously trodden and raked over, the soil should be made moderately firm about the roots in planting. The transplanting from the nursery beds should be done before the plants touch, taking them up carefully with a garden trowel with nice little balls of soil adhering to the roots, and planting them at the distances indicated. Celery ridges are profitably utilised for a month or six weeks, until it is necessary to land up the celery, by planting thereon a couple of rows of lettuce (see "Preparing of Celery Trenches"). Where the ground is plentiful there can be no question about the finest specimens of lettuce being obtained by sowing the seed very thinly, say, 3 or 4 in. apart in drills about 1 in. deep and 12 in. asunder, the ground having been previously prepared by manuring, digging, treading, and raking the surface level, afterwards closing the soil over the seed with the feet, treading and raking it over once more in the usual way. In due time the plants should be thinned out, first at 6 in. and subsequently at 12 in. from plant to plant in rows, in case of blanks occurring while the plants are small. And, if necessary to extend the plantation, the thinnings may be transplanted in the usual way, giving water at the roots, as a matter of course. The plants resulting from sowings made the third week in June and the end of the second week in July will, as stated above, come in for use in autumn and early winter, and they should be taken carefully up with a good bit of soil attached to the roots on the approach of frost-say, from the middle to the end of October-and be laid in the same depth in the soil as they were before, in a pit or warm sheltered border from which frost and heavy rains can

be kept out, giving water at the roots to settle the soil about them. At the same time avoid wetting the leaves, especially at the centre or heart, as the lodgment of water there at that time of year would probably cause them to rot. The plants should be given space enough to admit of light and air reaching them individually, and the lights or shutters or other protection employed should be removed daily, in the absence of frost or heavy rains or snow; the enemy to be guarded against in the preservation of these table-sized plants being damp. The plants raised from the August sowing should be pricked out, as previously stated, in cool pits and warm and dry borders having a south or west aspect, in rows about 3 in. apart and at the same distance in the rows, making the soil firm about the roots, but taking care not to press the "dibber" (consisting of a stick about 1 in. in diameter and pointed at one end) unduly against either root or stem in the process.

Sometimes slugs are very troublesome and determined in their attacks on these plants. They should be hunted up and destroyed. afterwards trailing a mixture of fresh soot and freshly-slaked lime occasionally along the sides and ends of the piece of ground or bed occupied with the plants as a means of keeping these slimy depredators at bay. As early in February or March as the nature of the weather permits, make a planting of the August-raised plants in a nice, rich piece of ground, having a south or west aspect, and, if possible, sheltered from the north and east by a wall or fence of some sort. Level the soil up round the stems of the plant set out thus early in the season, so as to prevent the possibility of water lodging about their collars. In making plantations during the summer, it will be advantageous to leave a slight depression round the collars of the plants for the reception of water. The early plantings should have a few spruce or other boughs stuck in the ground between the rows as a protection from frost and cutting winds for a week or ten days until the plants are re-established. Successional plantings should be made every three weeks from March to the middle of August.

After Treatment.—This consists in keeping the plants in every stage of growth moist at the roots, as, in the absence of rain, and particularly if the soil happens to be of a light description and consequently non-retentive of moisture, liberal supplies of water should, if good, solid heads of crisp lettuce are aimed at, be applied at the roots. Make a free use of the Dutch hoe between the rows of plants and keep them free from weeds.

Blanching the Heads.—In order to obtain as great a portion of the leaves of the individual heads of lettuce as white and crisp as possible, recourse should be had to tying up the leaves, but not too tightly, with bands of matting when the heads have nearly attained to their full

size. As the leaves of the cos lettuce are self-folding, they do not, as a rule, require to be tied up, although, by doing so, the process of blanching is more effectually performed. The tying up of the heads should be done when the leaves are dry. The cabbage lettuce generally requires tying up to become thoroughly blanched.

Saving Seed.—The autumn-raised plants are the best for seed. Selecting the finest specimens of the respective varieties for this purpose, those that heart quickly but show least disposition to send up their flower-spikes are to be preferred. And in order to keep the varieties true, only one variety should be "seeded" in any one garden at the same time. The seed, if properly ripened, will retain vitality for three or four years. The seed which ripens first on the plant is the best, so the branchlets which first ripen their seeds should be cut off before the seed has reached the "dropping" stage of maturity, and spread out on a cloth in the sun to dry for a few days; after which the seed may be rubbed out, cleaned, and put away in the seed-store for future use.

Insect Attacks.—The lettuce is subject to the attacks of various insects. These include the caterpillars of the Garden Swift (Hepialus lupulinus), of the Heart-and-Dart Moth (Agrotis exclamationis), of the common Dart Moth (A. segetum), and the maggets of the Spotted Crane Fly (Tipula maculosa); and these quickly make their presence known by the havoc which they work among the perpendicular or taproots of the plants. Wireworms, which are the larvæ of several kinds of Agriotes, are sometimes very troublesome by eating the roots and stems, too. Occasionally the leaves of the lettuce are attacked by the caterpillar of the Cabbage Moth (Mamestra brassicæ) and of the Lettuce Fly (Anthomyia lactucæ). The best remedy for the abovenamed depredators is to well surface-dress the ground immediately before planting with fresh soot, scratching it into the soil, making the ground fine and level with the rake. A few annual dressings of this powerful fertiliser will rid the ground of all insects, and a slight sprinkling of a mixture of lime and soot over the seedling plants before they come into flower, and while the leaves are damp, will make short work of the Lettuce Fly.

LIQUORICE.

(Glycyrrhiza glabra.)

This perennial plant is a native of Europe. Its flesh root runs deep into the ground, and its stem rises from 3 to 5 ft. above ground, and is clothed with dark green pinnate leaves. The sweet mucilaginous juice, extracted from the roots by boiling, is much appreciated as an emollieut in colds. Large quantities of liquorice are grown in Surrey for the use of druggists. A plant or two is kept in most gardens.

The roots are sliced and boiled in water, the liquor is strained, and allowed to evaporate till it acquires a proper consistence.

Soil.—A deep, rich, sandy soil is best suited to the growth of liquorice. It is propagated by portions of the stem, commonly called the creeping root, which push underneath the surface for a distance of 4 or 5 in. These should be forked up early in November and cut off close to the main stems, and be stored away in sand until planting time. They should be planted in rows 3 ft. asunder, giving 18 in. between the plants, early in March, covering the soil to a thickness of about 2 in. In autumn, after the sap has returned to the roots and the leaves have performed their proper functions, the old stems should be cut off close to the ground with a pruning knife. The ground between the rows should be forked once in the year, and Dutch-hoed frequently to keep weeds down. The roots will be ready for taking up three years after planting.

Taking up the Roots.—Early in November a trench, from 2 to 3 ft. deep, according to the length of the roots, should be taken out close to and parallel with the row of liquorice plants, and a rope being fastened round the top, the roots should be pulled up and stored in sand, or they may, if there is a large quantity, be put in pits like potatoes.

MARIGOLD, or POT MARIGOLD.

(Calendula officinalis.)

Is a hardy annual and a native of the south of Europe. It finds a place in the kitchen garden by reason of its flowers, which are used to flavour soups. The varieties cultivated are:—

- 1. Common, or Single-Flowered Marigold.
- 2. Double-Flowered Marigold.

The marigold will flourish in any ordinary garden soil and requires no special treatment. Indeed, as a rule, plants come up annually from self-sown seeds.

The marigold is, as already stated, propagated from seed, which should be sown early in April in drills between 1 and 2 in. deep and 1 ft. apart; afterwards thinning out the plants 1 or 2 in. high to 9 in. in the rows. These plants will flower from June to September. When the flowers are full-blown they may be gathered, dried in the shade, and put away in paper bags for winter and spring use.

MARJORAM.

(Origanum.)

The aromatic leaves of this plant are used both in a green and dried state for seasoning soups and other dishes. The species cultivated are:—

- 1. Common Marjoram (Origanum vulgare).—This British perennial plant may be raised either from seed sown in April, or by divisions of the roots planted 1 ft. apart in any kind of soil that is not very moist in March and October.
- 2. Pot Marjoram (Origanum onites) is a perennial plant, a native of Sicily, and, although it flowers from July to November, it rarely ripens its seed in England. It is propagated by dividing the roots in March, planting in rows 1 ft. apart and at from 9 to 12 in, in the rows.
- 3. Sweet, or Knotted Marjoram (Origanum majorana).—This tender biennial is a native of Egypt or Syria, whence it is supposed to have been introduced by the Romans. In the open ground it will not survive an English winter, hence it is treated as an annual. The seed should be sown in shallow drills 12 in asunder on a south or west border about the middle of April; afterwards thinning out the young plants to 5 or 6 in in the rows. The flowers appear early in July, and are gathered together into close knotted heads; hence the term "Knotted Marjoram." The seed rarely ripens in Britain, and is had from the Continent.
- 4. Winter Sweet Marjoram (Origanum heracleoticum). This hardy perennial plant belongs to the south of Europe. The plant does best in a light, sandy, and rather dry soil, and is increased by divisions of the roots in spring and autumn, planting the divisions in rows from 15 to 18 in apart and at about 9 in in the row. The flowers open from June to November. The tops of all the varieties of marjoram indicated should be cut when coming into flower, and dried in the shade, then tied up in bunches, named, and put away for winter and spring use.

MINT.

(Mentha.)

This well-known hardy perennial is a native of Britain, and there is no other herb, excepting parsley, in such constant demand. There are three species in cultivation:—

1. Common, or Spear Mint (Mentha viridis), which is grown especially for the tops of the young shoots, for soups and salads, in sauce for lamb, or boiled with new potatoes, peas, and other vegetables. The method of propagation is very simple, and may easily be effected by dividing the roots and planting the sections in rows 9 or 10 in. asunder and about 6 in. between in the rows early in March, covering the roots with a couple of inches of soil. Another system consists in taking cuttings from 4 to 6 in. long in summer and planting them 3 in. deep in the soil at the already prescribed distances and watering, in the absence of rain, until they have taken root. Mint will grow fairly well in any kind of

soil and situation, but it prefers light, sandy, moist ground. When the plants are coming into flower, the tops or flowering shoots should be cut and dried in the shade, or in a screen before the fire, and be put away in bags for winter and spring use. The old stems should be cut down early in November, the beds cleaned and covered with leaf or some light mould to the thickness of a couple of inches.

- 2. Peppermint (Mentha piperita) is a native of England. It is grown principally for the distillation of the well-known cordial, peppermint. It is propagated in the same way and at the same time as spearmint, and requires the same description of soil and treatment as that plant.
- 3. **Pennyroyal** (Mentha pulegium) is a hardy perennial British plant. It requires the same treatment as the preceding species, and is propagated in the same way and at the same time.

MUSHROOM.

(Agaricus campestris.)

This appetising and very nutritious edible fungus, although a native of Britain, is found pretty well in every quarter of the earth.

The seed or mycelium of the mushroom is invariably present near the surface of the soil of deer parks and downs and pasture fields on which sheep are annually fed, and only await climatic conditious, in the shape of warmth and genial rains, to give growth, form, and size to this well-The seed of the mushroom is generated in rank soil, known fungus. and in old manure beds and decomposed leaves. It takes the form of white mould with thread-like bodies pushing into the surrounding soil, from which in due time (from July to October), if not disturbed, mushrooms would annually spring. Therefore, those who wish to succeed in the culture and production of mushrooms should, as in the case of all fruits, vegetables, and flowers subjected to artificial treatment, first observe the conditions under which the most satisfactory results are naturally produced, and then shape their future artificial treatment accordingly. People who do this generally succeed, and vice versa. As a rule, more naturally-produced mushrooms are gathered in September than in all the other months of the year put together.

Materials for Mushroom Beds.—Manure from horse stables. Where this is scarce, oak or chestnut leaves, or, indeed, any kind of leaves, may be added, mixing the whole well together, turning it over three or four times at intervals of a couple of days, to allow of the rank heat escaping before forming the beds. Where plenty of dung from the horse stables is at command, all the long should be shaken out, retaining the short

and droppings. This should be turned over every day until it is pretty well "sweetened," that is, until all danger of violent fermentation is past. Manure obtained from stables in which the horses are mainly, if not entirely, fed on hay and corn is the best, as the manure obtained from stables in which the horses are given frequent supplies of carrots, grass, and medicine is unsuitable for making profitable mushroom beds with; failure and disappointment would be almost sure to follow its use. Peat-moss, tan, and sawdust, which are sometimes used in horse stables, and in that way absorb the drainage and ammonia, may also be employed for the production of mushrooms, as also may fermenting leaves, where the ordinary stable litter and droppings are not at command.

Where and How to make Mushroom Beds. -- For outdoor beds, a dry situation, where water will not accumulate, and sheltered from the north and east, should be chosen. The condition of the manure. prepared as recommended above, should be moderately moist, but not dry, before making it into beds. The latter may be from $2\frac{1}{9}$ to 3 ft. wide at the base, and about the same height, tapering to the top like a potato ridge or clamp, treading the material well together in the process of building. Where a wall or fence is available, advantage should be taken of the position to form a bed against it about 5 ft. wide and 2½ ft. high at back, sloping down to the front. If a bed has to be formed of heated leaves it will be advisable to open a trench about 4 ft. wide and 2 ft. deep, filling this with the leaves and treading them well together. Then insert a few sticks at short intervals in the beds to ascertain the degree of heat. The test-sticks should be examined daily after the beds have been formed a couple of days. And when the heat in them has declined to 80° Fahr., with no prospect of its rising above that degree, the spawn may be inserted. These remarks apply to beds made of any and all of the ingredients described above, especially so to those composed of stable manure. Caves, cellars, unused tunnels (free from the lodgment of water at all seasons) are well adapted for the production of large crops of mushrooms, the beds being made sloping from the walls to the passage, or whatever way space and shape of cave. &c. may suggest. Open sheds and such-like places may also be profitably utilised for mushroom growing where to spare. If a dry situation is not obtainable, sufficient clinkers, old rubble, or coarse gravel should be placed as a foundation for the intended beds.

Inserting the Spawn.—Fresh spawn (well charged with mycelium) should be obtained from some of the many seedsmen having a reputation for the sale of such. This is essential to success. Break the bricks into six or seven pieces, and insert these about 8 in. apart underneath the surface of the bed, drawing the manure back with one hand and

pressing the iudividual lumps of spawn into the openings with the other, the rough side of spawn being placed downwards, and the smooth barely underneath the surface of the bed, as indicated, pressing the displaced manure over and about the several pieces of spawn.

Soiling the Beds.—When the beds are being spawned, should there appear cause for supposing that the temperature in them would rise above 80° if hermetically cased over, an interval of a few days should be allowed to elapse before soiling them over. Although ordinary garden soil will answer the purpose well, rich maiden soil of medinm texture, such as may be obtained from a pasture, deer park, or downs grazed by sheep, is preferable. This should be sifted, and applied at a thickness of from 11 to 2 in. when sufficiently moist to allow of a firm, smooth surface being presented when beaten with the back of the The whole should then be covered with a foot thickness of litter: that which has been rejected when preparing the manure will answer well. In the case of beds made up in the antumn-say, early in September-for producing mushrooms during the winter and spring months, the covering on the beds should be increased in thickness from 1 to 3 ft., according as the weather is mild or severe. I am referring to beds made out of doors. Beds in houses and sheds in which a temperature of from 50° to 55° can be secured, only sufficient dry grass or hay to exclude light and air need be laid on. The surface of the heds should be kept moist. And should the temperatures indicated be maintained by hot-water pipes, it will be necessary to distribute tepid or lukewarm water in the house, in order to produce and maintain a genial atmosphere. Beds made and spawned—say, in April and May -will probably begin to yield mushrooms in July and August, and onwards. But should none appear within three or four months from the date of inserting the spawn in the beds, do not despair; they will come in due time if the spawn was good, and was inserted when the heat in the bed had declined to 80° or 75°.

Gathering Mushrooms.—Experience tells us that the old practice of cutting the mushrooms lest the young undeveloped ones surrounding the full-grown fungi should be displaced in pulling them is faulty, and that it is quite necessary to success that the stumps should be removed with mushrooms, thereby affording more scope, if not fresh energy, to the threads of spawn or mycelium, and finally adding considerably to the productiveness of the beds. Any of my readers wishing to obtain more extended information than can be afforded in these pages, I would strongly advise to procure Mr. John Wright's "Mushrooms for the Million."

MUSTARD.

(Sinapis alba.)

This hardy annual is found in fields and waste places in this country. White mustard is used, in connection with cress, as a small salad, for which purpose it is, like the cress, sown thickly and cut while in the seed leaf.

Mustard is raised from seed. This, if a constant supply is required, should be sown every eight or ten days in the open ground from the end of March to the end of September, and during the remaining six months in frames. The early and late outdoor sowings should be made in a warm corner, in a shady, moist situation. The ground should be light and rich, and should be made firm and raked fine before sowing the seed. The seed should be sown thickly, covered lightly, afterwards patting the soil with the back of the spade or shovel, and watered through a rose. A patch of soil thus prepared of from 9 to 15 square in. will be ample for one sowing for a small family, and the space should be more or less in proportion to the size of family and the demand for small salading at breakfast and tea; also putting between bread-and-butter saudwiches, &c. In very hot weather, if an old mat or cloth or a little damp moss is placed over the mustard and cress seed it will hasten the process of germination.

NASTURTIUM, or INDIAN CRESS.

(Trop @olum.)

THE leaves, young shoots, and flowers of this plant are frequently eaten in salads, and between bread-and-butter sandwiches. The flowers are also used to garnish dishes, and the flower-buds, leaves, and fruits, gathered when young, are pickled in vinegar and used as a substitute for capers. The species cultivated for this purpose are:—

- 1. Large Nasturtium (Tropæolum majus).
- $2. \ \, \textbf{Small Nasturtium} \, \, (\, \textit{Trop} \, \textit{\it wolum minus} \,).$

In Peru, to which country they belong, they are perennials, but are treated as annuals in Great Britain and Ireland. The plants thrive in a light, rich soil and a warm aspect. The plants are propagated from seed sown early in April, either in patches or shallow drills about 3 ft. apart, closing in the soil with the feet afterwards. T. majus attains to a height of from 5 to 8 ft., according as the soil is poor or rich, and is useful for covering poles and arches, thereby furnishing a striking example of the useful and ornamental combined. T. minus does not require any support. The only cultural attention necessary after the plants are up is the application of water to the roots in dry weather.

NEW ZEALAND SPINACH.

(Tetragonia expansa.)

This is a hardy annual and is a native of New Zealand. It was introduced into this country by Sir Joseph Banks in 1772. It is inferior to the ordinary spinach, but makes a very good substitute for it in hot, dry summers, when spinach has a tendency to run to seed as soon as it has made a few inches of growth. Under similar circumstances the New Zealand species yields a liberal supply of large juicy leaves. Hence the advisability of growing a proportion of New Zealand spinach to meet any contingency.

The plants do best in a light, rich, sandy loam. They are raised from seed, which, being very hard, should be steeped for a couple of days before sowing. The seed should be sown thinly about the middle of March, underneath a hand-light placed on a space its own size, excavated to the depth of 12 in., and filled up with hot dung and leaves, and 3 in. thick of light soil on the top.

When the young plants are about 2 in. high, they should be pricked out 3 or 4 in. apart under an old sash placed on a sunny border, giving them a few inches deep of light soil about them, and shading from sunshine for a few days until the roots have pushed into the new soil.

Transplanting.—About the middle of May the plants should be carefully taken up with nice little balls, and be planted in rows running north and south 5 ft. apart, and at 3 ft. from plant to plant in the row, making the soil moderately firm about the roots in planting. Afterwards give water to settle the soil, and, in order to keep the plants growing, they should have frequent applications of water at the roots during hot, dry weather.

Securing the Crop.—The young leaves should be pinched off, and not pulled, as that would most probably injure the buds at the axils of the leaves, which in due time yield an abundant supply of fresh juicy leaves during the summer and autumn months.

Saving Seed.—In order to save seed, put a few plants in shallow, poor soil in a warm situation early in May, supporting the flower spikes by stakes. The seed should be gathered in the usual way when ripe early in the autumn.

ONION.

(Allium cepa.)

No vegetable is better known or more generally cultivated than the onion. It is grown in almost all kinds of soil and climates, from the tropics to the coldest fringe of the temperate zone. The roots and

keeper.

leaves of the onion are annual, and die in the course of one summer and after completing a bulb, which, however, is biennial, and, after a few months' rest, sends ont new roots and produces fresh leaves, afterwards throwing up a flower spike. There are a great number of varieties of the onion in cultivation. The most reliable for spring sowing are:—

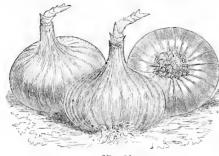


Fig. 21.

- IMPROVED BANBURY ONION. and gardens, the bulbs being large, handsome, firm, with small neck; a heavy cropper and excellent
- 1. Improved Banbury.— This is a splendid main crop onion, and is of exceedingly mild flavour. It is of great size, small neck, extra fine quality, and excellent keeper.
- 2. Reading, Improved.—
 This onion is, like the other varieties herein described, suitable for all kinds of soils and gardens, the bulbs being
- 3. Main Crop.—This is quick in growth, and, when fully developed, attains a large size. The bulb is haudsome, solid, and of a beautiful pale straw colour, fine quality, and long keeper.
- 4. Selected White Spanish is a good selection of the White Spanish type, small neck, ripens and keeps well.
- 5. Danver's Yellow is a round, oblate form, firm, with a very slender ueck. It is a very fine onion and a good keeper.
- 6. Market Favourite is very large in size, mild in flavonr, and a good keeper.

Other good varieties are Defiance, James's Keeping, Magnum Bonum, Blood Red, Deptford or Strasburg, Nuneham Park, Rousham Park Hero, Culzean Castle, and Ailsa Craig; the latter, with good culture and generous treatment, attaining to an enormous size in the neighbourhood of Basingstoke, where I have seen twelve bulbs of this variety shown which weighed 36 lbs. in the aggregate.

Varieties for July and August sowing, commonly but erroneously called autumn sowing, for producing bulbs for filling up the blank that would otherwise occur in May and June, as the onions of the previous year become used up, are:—

- 7. The Queen.—A very early variety, with small, round, and very white bulbs.
- 8. Early White Naples.—Of quick growth, mild flavour, large and handsome.

- 9. Golden Globe Tripoli is a remarkably handsome and high-quality onion, and is suitable both for autumn and spring sowing.
- 10. Giant Rocca is of globular shape, very large, delicate flavour, and light-brown skin.
- 11. Silver Skin, This is a small white onion, cultivated for "picklers."
- 12. Potato, or Underground Onion.—These form a number of hulbs on the parent root underground, and by means of these it is propagated and ensures a good supply, even during a very hot and dry season.

Soil.—Although fairly good crops of onions may be secured from any kind of soil, ranging from peat to substantial loam, the best possible results are obtained, in connection with good culture, from seed sown in a good, rich loam, inclining to be light rather than heavy in texture, and in an open and somewhat dry situation.

Preparing the Ground.—If the soil is of a strong, adhesive nature, it should be rendered more porus by the addition of leaf mould, chalk, burnt earth, coal or wood ashes in autumn, as soon as the ground is cleared of the summer crops, and should then be ridged up for the winter. Previous to ridging up, the ground should have a good dressing of well-rotted stable or farmyard manure. Advantage should be taken of fine, dry weather to level down the ridges, and dig over the whole just before sowing the seed; then tread and rake the soil, making it level, and laying on a good surface-dressing of soot before putting in the seed. Where onions follow celery, which is generally the case, the ground need only be levelled and deeply dug after the celery has been cleared off in February, afterwards treating it as indicated.

Sowing the Seed.—As early in February as the soil is sufficiently dry to prevent its adhering to the feet, the seed should be sown thinly and evenly in drills about 1 in. deep and 1 ft. asunder. The soil should then be closed in over the seed with the feet, and again trodden down over each individual drill, and then finally raked over in the same direction as the drills, so that the bed, when finished, may present a fine, firm, and even surface.

After Treatment of Main Crop.—This consists of thinning out the young plants in due time (when a couple of inches high) to from 3 to 6 in. from plant to plant in the rows, according as the soil is poor or rich, and the usual size to which the respective varieties attain, filling up at the same time any blanks that may occur in the ranks with some of the thinnings, letting the young plants as deep into the

ground as they were before. The thinning and weeding of the plants may be proceeded with together, choosing showery weather for the operation, as then the plants not only draw and transplant better, but they experience very little check. The plants must be kept free from weeds, and the soil, stirred between the rows occasionally during the growing season, completes the necessary cultural details till the bending down of the tops of the plants early the following August.

Harvesting the Crop.—As early in August the tops of the plants have turned yellow, the bulbs should be pulled and spread out in widths of about 4 ft., with their roots facing the sun. Turn them over every other day until the tops and the bulb are both thoroughly dry. The withered tops may then be cut back to within a few inches of the bulbs, which are then stored away in a loft from which frost and damp can be excluded. They should be spread out thinly on the floor of the loft or be strung together by the withered tops, and suspended from the roof. When storing the bulbs, put all the small ones by themselves for pickling or culinary purposes, for which they are frequently asked for in preference to larger ones.

Sowing for "Picklers."—In order to obtain small, firm bulbs for pickling, seed of the Silver Skin Onion should be sown in spring in a somewhat poor, dry, shallow soil, in which they are not likely to make luxuriant growth; and, with this object in view, the seed should be sown rather thickly broadcast. When the bulbs have completed their growth, they should be pulled up, and should the weather be showery at the time, spread out on boards, shutters, or hurdles to dry, in preference to laying them on the damp soil. But if the soil is dry and fine weather prevails at the time, they will do very well spread out on the ground, afterwards storing them away, as above.

The Potato, or Underground Onion, should be planted early in spring in deep, rich soil, in rows 1 ft. apart and 6 in. apart in the rows, burying the bulbs barely under the surface. If larger bulbs of this and the ordinary onion are desired, they should be allowed a space of 15 in. between the rows, and 12 in. from plant to plant in the rows. The crop should be taken up and dried when the tops die down and be stored away dry.

Sowing for Transplanting in Spring.—About the 25th of July and again in the middle of August are good times to sow onions for use the following May and June. In cold districts the first sowing should be made a few days earlier, and, in order to secure the best possible results, a dry and somewhat light soil should be selected in preference to a damp, heavy one, and the site should be well exposed to the south

or west. The preparation of the ground for the reception of the seed and the cultural details are the same as those recommended for springsown ouions, so need not be again detailed.

The varieties, the Queen and Early White Naples, should be used in the first sowing, and for the second and last sowing, Early White Naples, Giant Rocca, Golden Globe Tripoli, or any of the other varieties of Tripoli mentioned above should be employed. The seed should be sown somewhat thickly, afterwards thinning out the young plants as required for salading during the autumn months, leaving the plants sufficiently thick in the rows to make allowance for mishaps during the winter. The result of these sowings will, as already stated, fill the blanks that would otherwise most probably occur in May and June.

Saving Seed.—When the onions are taken up, select some of the finest and best shaped bulbs, of whatever variety it is desired to save seed from. Early the following March these should be planted in a row 1 ft. apart and about 4 in. deep in light, rich soil in a sunny and sheltered situation. When the flower spikes push into growth they should be supported by small stakes. The seed will be ripe by the end of August or early in September, according as the season is early or late. The stalks should be cut a few inches above the ground and spread out on a cloth in the sun to dry, taking care that the seed does not get wet during the few days it is in the open air to complete the ripening process. When quite dry, the seed should be rubbed out, cleaned, and stored away in paper or other bags for use in due time. One ounce of seed will sow $4\frac{1}{2}$ square yards, or a drill 80 yards long. Onion seed retains its vitality for two or three years.

Insect Attacks.—The maggets of the Onion Fly (Anthomyia ceparum), of the Brassy Onion Fly (Eumerus æneus), of Snake-Millepedes (Juli), and of the Polydesmus complanatus frequently work havoc among the onion crops of this country. The best and only effective remedy that I know of for the prevention and eradication of the above troublesome pests is, to give the ground a good surface-dressing of fresh soot immediately before drawing the drills for the seed, scratching it into the ground in the process of raking over the onion bed. The presence of insects in the ground indicates that the latter requires purifying, and for this purpose there is no better agent than fresh soot, put sufficiently thick on the ground to completely cover it. It is also, as stated more than once in this work, a capital fertiliser. The application, to be successful, should be repeated annually for all crops subject to the attacks of insects at the roots.

ORAGE, or MOUNTAIN SPINACH.

(Atriplex hortensis.)

Is a hardy annual, and a native of Tartary. There are four known varieties, viz.:—

- 1. White, or Pale-Green-leaved Orage.
- 2. Green Orage.
- 3. Red Orage.
- 4. Dark-Red Orage.

The leaves are used as a substitute for spinach.

Soil.—The plant is not particular as to soil or position, but large and juicy leaves are produced by plants growing in rich soil and in an open situation. The soil having been liberally manured, dug, trodden, and levelled with a rake, drills about 24 in. asunder and 1 in. deep should be drawn, and in these the seed should be sown very thinly about the first or second week in March, and again at the end of May for succession, closing the soil over the seed, treading and raking it afterwards. If a constant supply be desired, additional sowings should be made up to September. The flowers should be pinched off, leaving a few plants to seed. The seed, being very light, and therefore likely to get blown away by the wind, should be collected before it is quite ripe, dried, and afterwards rubbed out on a cloth, cleaned, and put away in the seed store. One ounce of seed will sow a drill 100 yards long. The young plants should be thinned out to 18 in. in the row.

PARSLEY.

(Petroselinum sativum.)

This well-known biennial is a native of Sardinia. It is one of those popular herbs which are used in every household, from the palace down to the humblest cottage. It is used in stuffings, for flavouring soups and stews, and for garnishing ham, chicken, &c. The Fool's Parsley (Æthusa cynapium), a poisonous plant belonging to the same natural order as the true parsley, is very much like the plain-leaved, cultivated variety; consequently, dangerous mistakes sometimes take place. When partaken of, this spurious parsley causes sickness, numbness, and insensibility, and has proved fatal in some cases. According to Dr. Christison, the best applications in case of accident are milk, mustard poultices on the legs, and cold sponging with vinegar.

It may easily be distinguished from parsley by the unpleasant smell of the leaves when bruised, by their being of a much darker green and of a slightly different shape. The Fool's Parsley is sometimes met with in old gardens; hence my drawing attention to its deadly nature and

sounding a warning note here. It is best not to grow any plain-leaved varieties, there being several beautifully-curled strains in cultivation. The best descriptions are:—

- 1. Triple-curled.—Where a large supply of parsley is in demand for culinary and garnishing purposes, this variety should be grown. It attains a good size, and is exceedingly handsome and very much curled.
- 2. Fern-leaved is a dwarf, compact-growing, and highly ornamental variety.

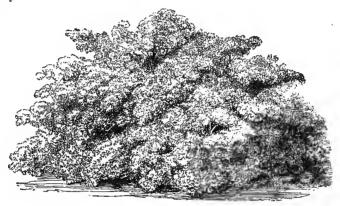


Fig. 22.
TRIPLE-CURLED PARSLEY.

3. Dwarf Perfection.—This is of a bright green colour, compact habit, beautifully curled, and very ornamental for garnishing purposes.

Soil.—Parsley will succeed well in any kind of moderately rich soil between light and heavy in texture, the site being well exposed to the south, west, or east for the summer crop. Parsley makes a very effective edging for kitchen-garden walks, that is, growing alongside the permanent edging of box, flints, or tiles, and in such positions, as well as in rows 1 ft. asunder, in borders from 8 to 12 ft. wide, in front of walls or fences, with the proper exposure.

Parsley is generally grown in private gardens, but, in addition to these positions, market gardeners grow large widths of this muchsought-after herb in the open field.

Preparation of the Ground.—As a matter of course, the ground intended to be cropped with parsley should be manured and dug, the soil trodden when dry enough not to stick to the feet, raked level, and dressed with fresh soot before drawing the drills. These should, as already stated, be 1 ft. apart and about 1 in. deep, either for the reception of the seed or the transplantation of the seedling plants. The latter is the preferable method of procedure. If the ground is

naturally stiff it should be manured, dressed with leaf-mould, chalk, burnt earth, or any other light vegetable substance that may be at hand, and be ridged up in the autumn, levelling it down, when dry, a few days before sowing or transplanting in spring.

Sowing the Seeds and Transplanting the Young Plants.—Two or three sowings in the year will be ample; the first should be made towards the end of February or early in March in a warm corner out of doors, the second in May, and the third in the middle of July. Where there is the convenience of a stove, hot-water pit, or the oldfashioned hot-bed at command, the first sowing should be made in a shallow box, having a potsherd or piece of tile placed over the few holes made in the bottom for drainage, followed by a layer of half-rotten leaves or short dung and a conple of inches of fine rich soil. The seed should be sown somewhat thickly and be covered lightly, making the soil moderately firm before and after the seed is sown with a piece of board or slate. Water through a fine-rosed can, placing the box in heat. Where this accommodation does not exist, select a warm situation out of doors, say, under a south or west wall or fence, excavate 9 or 12 in. deep and about 18 or 20 in. square, and fill it up with horse-droppings, or a mixture of hot dung and leaves if the droppings are not at command, covering this with 4 in. deep of fine, light, rich soil. And in this sow the seed in the manner advised above and cover it with a piece or two of glass, protecting this from frost with an old mat, fern, or litter. As soon as the plants come up a little fresh air should be admitted to them to ensure a sturdy growth. When a couple of inches high they should be transplanted, as previously recommended either into single rows on either side of the walks or in a border in rows 12 in. asunder and 6 or 7 in, from plant to plant in the rows. The soil must be made firm about the roots in planting, afterwards giving water at the roots to settle the soil. By sowing a small patch of ground with seed and subsequently transplanting the seedlings, ground space is greatly economised, as the piece of ground intended to be cropped with parsley may not be ready for six or nine weeks after the time the seed should be sown. It will now be readily seen that the system recommended has special advantages over the older method.

Moreover, parsley transplants excellently if the operation is performed in showery weather and care is taken that the roots are not bent in the process of transplanting.

The last planting or sowing should be made in a warm and sheltered spot, where the plants can be easily protected from frost by an improvised frame and shutters, fern, long litter, or any kind of protecting material that may be at hand.

After Treatment.—In the event of there being a long spell of hot, dry weather, the plants—especially if they are growing in rather a light, well-drained soil—should be frequently watered at the roots, otherwise they make a very meagre growth, which will become a prey to the attacks of insects and mildew. The plants should also be kept free from weeds, and have the soil between the rows stirred frequently during the summer and early autumn months with the Dutch hoe, and old or damaged leaves should be removed as soon as they appear, to make room for the development of fresh ones, which will spring up soon after the old or coarse leaves have been cut over.

To Save Seed.—The necessary number of plants having the most perfectly-curled leaves should be selected and transplanted into a warm open bed by themselves and watered.

When the seed ripens, towards the end of July, it should be collected and spread out on a piece of cloth for a few days to dry; afterwards rub it out, clean, and put away in bags for future use. The seed retains its vegetative powers for two or three years. Sufficient plants for a row 100 ft. long may be raised from one ounce of seed.

Insect Attacks.—Grubs of various kinds, the Onion Maggot being the most destructive, frequently do great mischief by eating the tap and other roots of parsley. The attacks, as previously intimated, may be effectually averted by strewing fresh soot over the ground just before sowing the seed or transplanting the seedlings, and scratching it into the ground with the rake. Mildew is caused by either excessive heat and dryness, or by an excessively cold and moist atmosphere during the summer months. The leaves most affected should be picked off and the others dusted while damp with flour of sulphur.

PARSNIP.

(Pastinaca sativa.)

This hardy perennial is a native of England. The roots, for which it is grown, are eaten with meat, fish, and in soups. A fairly good wine may also be made from them. They are very nourishing. The varieties generally cultivated are:—

- 1. Hollow Crown.—This produces roots about 18 in long and 5 in in diameter at the thickest part, and is of excellent quality.
- 2. The Student grows to an immense size in deep, rich soil, and with generous treatment.
 - 3. Maltese is another excellent variety.

Soil.—A deep, rich, open, sandy loam, away from the shade of trees and enriched by manure, is capable, in counection with skilful cultivation, of producing parsnips of the finest description and hest quality.

Preparation of the Ground.—The ground, in a general way, should be manured and ridged up or trenched in the autumn, as soon as the summer crops are cleared off, levelling it down when dry about the end of February or early in March, according as the district is warm or cold and the condition of the weather, treading it over and giving it a good surface-dressing of fresh soot before drawing the drills. If this operation is deferred till spring, which is frequently the case through force of circumstances, only very short and thoroughly decomposed manure should be incorporated with the soil in the process of digging.



Fig. 23.
HOLLOW CROWN
PARSNIP.

Sowing the Seed.—From the end of February to the middle of March, or as soon after those dates as the condition of the soil permits, sow the seed very thinly in drills between 1 and 2 in deep and from 15 to 18 in asunder, closing the soil in over the seed with the feet, treading it again and raking level in the usual way.

A second sowing may be made about the middle of May for use in the following spring.

After Treatment.—This consists in thinning out the young plants when a couple of inches high, first to about $4\frac{1}{2}$ in from plant to plant, drawing every other plant when they have made 4 or 5 in. growth. And, if extra large roots are desired, the plants should be thinned out to 12 in in a few of the rows. They should be kept free from weeds, and the soil between the rows should be stirred to the depth of 1 or 2 in with the Dutch hoe a few times during the summer.

Taking up and Storing the Roots.—Early in November, when the tops or leaves have died down, all or only a portion of the roots may be taken up and laid in perpendicularly about 1 in underneath the soil in a dry border, in the manner recommended for beet-root and carrots. If the ground is not required for preparation for other crops, the roots may remain where growing till the end of January, or even later. In the event of frost setting in, a sufficient breadth of roots should be covered with fern or long dung to enable a supply being taken up when necessary.

To Save Seed.—As in every other case of seed saving, none but the best specimens should be selected for this purpose. These should be replanted early in February, giving them a distance of 2 ft. between the plants in the row and a sheltered situation. They will flower in July and ripen seed towards the end of August. Seed more than one

year old is not to be depended upon. One-and-a-half ounces of seed will sow a drill 200 ft. long.

Insect Attacks.—The parsnip is subject to the attacks of the maggots of the Carrot Fly (Psila rosæ) as well as those of Psila nigricornis, which prey upon the roots. Good surface-dressings of fresh soot put on the ground will free the soil of these depredators. The Celery Fly (Tephritis onopordinis) lays its eggs in the leaves, and the caterpillars live upon them, producing large blisters. The only safe and effective remedy is to pinch off all leaves so affected and burn them. The caterpillars of Depressaria applana, D. cicutella, D. daueella, and D. depressella ravage the flowers and seeds. A dusting over of the flowers while damp, and before they open, with a mixture of lime and soot will prove an effective remedy.

PEAS.

(Pisum sativum.)

THE pea is said to be a native of the Levant. Whether in a green or ripe state it is highly nutritious. The number of varieties in cultivation does not fall short of a hundred, but those enumerated below may be considered the "cream" of the different sections.

FIRST EARLIES.

- 1. A 1.—This is a valuable acquisition to the list of early peas. It is a wrinkled pea, possessing the marrowfat flavour, and is as early as Ringleader. The haulm attains a height of from 3 to 4 ft., is thickly covered with fine pods, containing from five to nine large peas of excellent flavour each.
- 2. Lightning.—This is another grand early pea of recent introduction. It is of dwarf habit, the haulm being robust, about $2\frac{1}{3}$ ft. high, and closely studded with handsome, well-filled pods containing from eight to nine peas of first-rate quality each.
- 3. Ringleader.—This well-known variety comes in about the same time as the preceding variety. Its average height is 3 ft.; it is a prodigious cropper. The pods, although not so large as those of William I., are well filled and of fine quality.
- 4. **Oxonian.**—This fine early wrinkled marrow pea was sent out in 1888. It is exceedingly productive, the stout branching haulms, 4 ft. high, being well furnished with well-filled pods.
- 5. American Wonder grows to a height of from 10 to 12 in., and on that account it is well adapted for growing in shallow pits and underneath glass. It is of compact habit, good cropper, and fine

flavour. Chelsea Gem, of like habit of growth, is also suitable for growing in a pit, in rows about 18 in. asunder, for yielding gatherings of green peas in April.

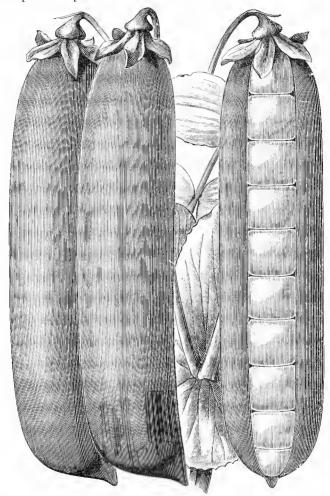


Fig 24.-A 1 PEA.

Other good varieties are William I., Early Blue, Early Sunrise, and Early Paragon.

SECOND EARLIES.

6. Wordsley Wonder is a blue wrinkled marrow, growing in ordinary soils to a height of from $2\frac{1}{2}$ to 3 ft., of strong and free-growing habit, and is a prodigious cropper, producing in pairs medium-sized slightly-

curved pods, containing from nine to twelve large peas of excellent quality each.

- 7. Supreme.—The haulms of this excellent variety grow to a height of 6 ft. in good soil, and are heavily cropped with handsomely-curved, dark-green, well-filled pods, the peas being large and of fine quality.
- 8. Stratagem is a dwarf wrinkled marrow variety, of sturdy, compact habit, a very heavy cropper, producing long, handsome, dark-green pods, remarkably well filled with large peas of excellent quality. Height of haulm, 2 ft.
- 9. Telephone. Haulm 6 ft. in height, and heavily cropped with very handsome, pale-green, long pods, containing, on an average, nine large wrinkled peas each, of fine flavour when cooked.
- 10. Perfection. Height 3 ft. This is a very heavy cropper, the large wrinkled marrow peas being of excellent flavour.

Other good varieties are Chancellor, Pride of the Market, the latter of the same description as Stratagem, only the pods are handsomely curved instead of being straight. Telegraph is a fine round blue pea, and in other respects, with the exception of the pods being of a dark-green colour, it is identical with Telephone.

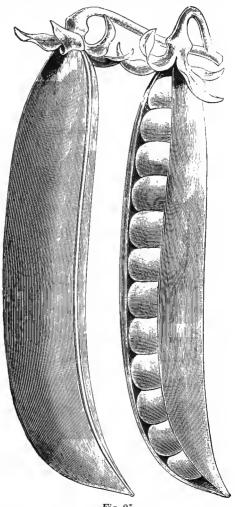


Fig. 25.
WORDSLEY WONDER PEA.

MAIN CROP.

11. Royal Jubilee is a grand and very profitable pea, and is suited alike for the poor man's and the rich man's garden, and as an exhibition



pea it has few equals. It is a vigorous grower, the haulms between 3 and 4 ft. high, being heavily laden with large, handsome, swordshaped pods, each containing from nine to twelve large and deliciously-flavoured peas.

- 12. Elephant.—This is a very prolific maincrop pea. It is a good grower, producing handsome, well-filled, dark-green pods, containing nine to ten peas of high quality.
- 13. Duke of Fife is a grand new pea from 5 to 6 ft. high, producing handsome pods nearly 6 in. long, containing from nine to twelve large light-coloured and deliciously-flavoured peas each.
- 14. Royal Standard is the result of a cross between those two standard varieties, Ne Plus Ultra and Telephone. It is a blue wrinkled marrow, of strong constitution, attaining a height of 5 to 6 ft., and is a great bearer; the pods are very large, broad, straight, and closely filled with from seven to nine extra large peas of fine flavour.

Telephone, Telegraph, Main Crop, Strata gem, Pride of the Market, Main Crop Marrow, Champion of England, Huntingdonian, Dr. McLean, Invincible, and Chancellor are quite as good for main crop as they are for second crop.

LATE CROP.

15. Prodigy.—This very excellent late pea was raised by hybridising Giant Marrow with pollen from Stratagem, and embodying all the good qualities of its parents. It attains a height of 5 ft., is enormously productive, bearing generally in pairs an abundance of extra long, handsome, broad pods, which are nearly straight, each containing nine to eleven very large peas of excellent quality and fine flavour.

Fig. 26.

16. Selected Ne Plus Ultra is one of the best late peas in cultivation. This combines all the merits of the old Ne Plus Ultra, but is rather more dwarfed in character, hardier, very prolific, and in every way excellent. It grows to a height of 5 ft.

- 17. Sturdy.—This fine late pea is the result of a cross between Perfection and Ne Plus Ultra, and combines the good qualities of both these excellent varieties. It is extremely robust, strong-growing, and very much branched; about 3 ft. in height, flowers successionally; is a great cropper, and continues to bear until cut down by frost.
- 18. Perpetual is very robust and branching, therefore requiring to be sown very thinly in the row; good cropper, height 4 ft.

Other good reliable late varieties are Reading Giant, British Queen, and Laxton's Omega.

Soil.—A deep, rich, loamy soil, inclining to be heavy rather than light, but not stiff, is very suitable to the growth of peas, but very good crops of peas are annually secured from light soils, especially during wet summers, when plants growing in light rather than heavy soils yield the most satisfactory crops.

Preparing the Ground.—There is no garden crop that pays much better for good cultivation and generous treatment than peas; therefore, the ground intended to be cropped with them during the following spring and summer should be liberally manured and trenched to a depth of 18 to 30 in., according to the natural depth and quality of the soil, and this as early in the antumn as possible. Should the soil be of a stiff, adhesive nature, it should be ridged up roughly, to be acted on by the winter frosts and exposure to the weather, at the same time adding burnt earth, leaf-mould, wood-ashes, or chalk. The addition of any one or all of these ingredients will produce a mechanical change in a naturally stiff and adhesive soil, and thereby render it more congenial to the growth and requirements of the pea. The ridges should, as a matter of course, be levelled when the soil is dry, just before sowing time. Where the crops have not been cleared off the ground until a few days before it is time to put the crops in, a trench or trenches should be prepared as recommended for celery, drawing a drill in the centre of the trenches for the reception of the seed.

When and How to Sow the Seed.—The majority of people sow three, yea, four times as many seeds as are necessary for a crop, thereby not only wasting seed, but thwarting the very object in view, namely, the production of good ranks of well-developed, heavily-cropped haulms. The haulms springing from the individual peas have not room to make that healthy growth which is necessary to the production of satisfactory results; hence they stifle each other and become an easy prey to mildew and other diseases, consequent upon the overcrowding of the plants.

In making early sowings of peas out of doors, the seed should be sown thicker, say, 1 in. asunder, zigzag fashion in the row, than would be advisable in sowing the same varieties in spring and early summer, so as to make allowance for any mishaps that may occur during the winter months by the seed perishing, the young plants damping or being eaten off by mice or slugs. From 2 to 3 in. asunder in the row is quite close enough to sow such branching varieties as Early Sunrise, Perpetual, Supreme, Royal Standard, Stratagem, Pride of the Market, Telephone, Telegraph, Royal Jubilee, Main Crop Marrowfat, Ne Plus Ultra, Sturdy, and Prodicy. Indeed, sowings of the last-named eight varieties, made any time between the first week in March and the end of the first week in June, may be given 1 or 2 in. more space between the peas. As a matter of fact, I have secured splendid gatherings of extra long (6 in.) well-filled pods of Giant Marrow Pea from seed sown from 9 to 12 in. apart. But this is a very strong-growing and free-branching pea, and the soil in which I grew it was extra good, and the treatment special and generous. This distance should not therefore be taken as a guide in ordinary cases, even with the same variety. It is also a great mistake to sow or plant rows of peas as near to one another as is generally done. because by so doing a great deal of light and air are prevented from reaching the plants in every stage of their growth, thereby detracting from the quantity and quality of the produce. All peas should be sown or transplanted in drills running north and south and about 3 in. deep. American Wonder and Chelsea Gem may be sown or transplanted in rows at from 15 to 18 in. apart, giving such varieties as Stratagem, Omega, Pride of the Market, Early Marrowfat, and Early Sunrise 3 ft. between the rows, and Ringleader, William I., Royal Jubilee, Sturdy, Perfection, and Main Crop Marrowfat 5 ft., growing a rank of cauliflower between the rows of peas, allowing from 8 to 10 ft. between the rows of Telegraph, Telephone, Ne Plus Ultra, Reading Giant, Duke of Fife, Sturdy, and Elephant, and planting from two to three rows of cauliflowers or cabbages between them.

The best method of raising early peas, as well as some of the second-early large-podded varieties, is to sow about six peas in 3-in. pots three parts filled with light, rich mould the last week in December or early in January, covering the peas with a couple of inches thick of the same description of mould, watering, and then placing the pots so filled in a peach-house or early vinery, or any place under glass in which a minimum temperature of between 40° and 50° is kept up, putting the peas into a cold-house or pit as soon as they have made about 2 in. of growth, to harden them off before transplanting them into a warm border about the middle of the following February. They should then have a little soil drawn up to the plants on either side, and be supported by short-spray or spreading sticks being stuck firmly into the ground on either side of and close to the plants, following this with a good dusting of a mixture of lime and soot, as a

means of preventing slugs from attacking the plants, and mulching with half-rotten dung, to the thickness and width of 6 in. application will have a fourfold effect; it will shield the plants from the effects of entting winds, preventing the soil about the roots of the peas from being frozen, preserve the ground in a more equable condition than would otherwise be secured, and, in addition to conserving the moisture at the roots in spring and summer, every time that water is applied, it will wash the substance of the manure down to the roots. The plants should be protected by sticking spruce or other evergreen spreading boughs into the ground on each side of the plants. These should be removed daily on fine days, replacing them in the evening, until the first or second week in March or thereabouts, when they should be removed altogether, and the ranks of peas be finally staked, always keeping the sticks close to the haulms so as to prevent them from swaying. Where there is any difficulty in procuring the pots, pieces of turf about 3 in. square and 2 in. thick may be substituted for the pots; the peas will soon take possession of the soil side of the tnrf. Where there is not glass accommodation at hand, the first sowing should be made early in November, on a light, warm border sheltered from the north and east. The soil should be closed in over the peas with the feet, and if of a light description, trodden, and afterwards raked, marking the position of the rows by putting a stick in the ground at each end of the rows. As successions to the first sowings, sowings of the same early varieties, Early Marrowfat, Supreme, Stratagem, Telephone. or Royal Jubilee should be sown in the open, weather permitting, about the middle of January. Another sowing of as many of the second early varieties as there is room and necessity for should be made three weeks later, repeating this sowing of the same varieties the end of February, making sowings of the main-crop varieties afterwards, at intervals of a fortnight or three weeks, according to the nature of the weather, up to the end of the third week in May, sowing for late crop the end of the first or second week in June, according as the district is cold or warm, in a situation close to plenty of traffic, otherwise the sparrows will be very troublesome. Twice or thrice the number of rows should be sown at this sowing as were made at preceding sowings, as three months later the pods will take a longer time than previous crops did to fill. If sowings are made later in June than the dates indicated, they should be made in warm situations, and consist of early varieties.

After Treatment.—This consists in drawing a little soil up to the haulms on either side as soon as the peas have made I or 2 in. in growth, supporting them forthwith with hazel or beech branches corresponding with the known height of the respective variety of peas,

breaking off the tops evenly at that height. This done, lay on a good mulching of short dung in the manner set forth above. Thus treated, it is seldom necessary to apply water at the roots of peas resulting from the first and second sowings, which, in favourable districts, and under the influence of fairly good spring weather, will yield gatherings of green peas from about the end of the third week in May to the middle or end of June. The plants must not at any time during their growth—except when the peas are being saved for seed—be allowed to get dry at the roots. Hence, during dry, hot summer weather, the plants, in order to keep them growing and in bearing as long as possible, require that copious supplies of water (all the better if it be diluted liquid manure) should be given at the roots. This will be more especially necessary if the soil in which the plants are growing is light.

Stopping the Plants.—In order to hasten the process of podding (where necessary) the tops of the haulms should be pinched off as soon as the flowers are open. The temporary check thus given to the plants will enable a gathering of peas to be made a few days earlier than would otherwise be the case. As soon as the pods are fairly well filled with peas, they are fit to gather for cooking purposes.

To Save Seed.—In a general way, sufficient seed of the several varieties cultivated in gardens may be saved from the several second, early, and main-crop sowings, but in places where the peas are gathered as fast as the pods are properly filled, either for home consumption or marketing, it will be necessary to sow the needful number of rows, or parts of rows, of the desired varieties, especially for seed, about the middle of February. These will, in a general way, be ready for gathering and storing by the end of June or early in July.

One pint of peas of the ordinary size, say, Ringleader, will sow a row, at 1 in. asunder, about 83 ft. long.

Insect Attacks.—The enemies of the pea are numerous. They include mice, birds, snails, slugs, and the Pea Weevils—Sitona crinita, S. lineata, and Otiorhynchus picipes. These depredators devour the young plants as soon as they appear, if preventive means are not adopted. Mice and the Snake-Millipedes eat the seeds committed to the ground. The caterpillars of the Y Moth (Plusia gamma) and the maggots of a small fly (Phytomyza nigricornis) feed upon the leaves. Birds and the pea maggots—which are the offspring of a moth called Tortrix pisana—attack the peas in the pods, and the maggots of the Bean Grain Beetle (Bruchus granarius) eat out the interior of the seed peas. Mice can easily be trapped, and the birds can be kept at bay by placing a length of small-meshed garden netting over the ranks when the plants come up, and again when

they begin to pod. Slugs and snails may be kept at a harmless distance from the plants by laying on either side and ends of the several ranks a good dusting of a mixture of fresh soot and lime, repeating the application when necessary. The Pea Weevils may be dislodged and further attacks averted by dusting the affected plants while damp with soot and lime. Mildew (Oidium tuckeri) in peas is generally caused by excessive dryness at the roots and an unduly wet and cold atmospheric temperature during the growing stages of the plants; the remedy being, in the former case, adequate supplies of water given at the roots, and in the latter, the dusting of the affected leaves of the plants, while damp, with flour of sulphur.

THE POTATO.

(Solanum tuberosum.)

This most useful of all cultivated garden and field crops is a perennial plant, with a tuberous underground stem. It is a native of Chili and Peru, where it is found wild under greatly different conditions of climate and soil. It is generally supposed to have been introduced into England from Virginia by Sir Walter Raleigh, in 1586. It was, however, only towards the eighteenth century that the potato began to be largely cultivated in Britain, and from that time it has steadily increased in favour, till it has become an important article of food to all classes of the community, and the principal food of the Irish people. And although disease has worked havoc among the potato crops from time to time, there does not appear to be any material, if any, falling off in the average planted annually.

That some varieties of the potato are less liable to be attacked by disease than others goes without saying, and experience tells us that potatoes growing in ground fertilised with artificial manures are invariably not only less liable to be attacked by disease of every kind to which the "floury tato," when grown under unfavourable conditions, is heir, but they are also cleaner in the skin, and a better quality than are tubers resulting from plantings made in ground which had been liberally dressed with farmyard manure a few weeks before the sets were planted. This is a fact that cannot be too widely known.

The planting of potatoes in ground into which is ploughed, not infrequently at the time of planting, a heavy coating of farmyard manure, rich in gaseous matter, is a great mistake, inasmuch as it promotes an over-luxuriant growth of haulm, at the expense of the weight and quality of the roots produced. Moreover, potatoes produced in soil surcharged with ammonia are generally deficient in quality, the skin being somewhat coarse and scabby. Indeed, both haulm and tubers produced under these undesirable conditions become an easy prey

to disease, in the event of an undue quantity of rain falling towards the end of July. The sappy haulms, then lying together in a mass, ferment; consequently, stoppage and discolouration of growth and diseased tubers follow as a matter of course, and the fact of the flow of sap being thus stopped in the haulms, through which channel comes the superfluous impure gaseous matter surrounding the potatoes, tends to greatly aggravate the disease.

Many people make a grave mistake in planting their potatoes too closely together, under the erroneous impression that they thereby secure a greater weight of produce off a given area; in fact, their doing so thwarts the very object aimed at, and renders the crop liable to be attacked by disease without any other cause for its presence than the crowding of the plants—that is, insufficiency of room for the individual plants to properly develop themselves, and the absence of a free passage of light and fresh air between the top and underground growths of the plants. If farmers and others could be induced, in planting their main crop of potatoes, to plant every alternate row or drill with beet-root, mangolds, carrots, turnips, cabbages, and such-like equally profitable crops, allowing a space of 2 ft. between all the rows, manuring the ground, where animal or farmyard manure is to be used, as soon in the autumn as the summer crops have been removed, the potato murrain would, in my opinion, be unheard of among potatoes thus grown. Potatoes prefer a light dry soil to a heavy damp one, and cleaner and better-quality tubers are annually secured from ground in fairly good heart as regards fertility, than are obtained in adjoining fields from ground rendered rank by repeated applications of animal manure. Such ground usually contains an abundance of large fat maggets and other iusects injurious to root crops, and their presence goes to show most conclusively that the soil is too rich in gaseous matter, and is not in that healthy, sweet condition indispensable to the production of clean, high-quality potatoes. It is a fact worthy of mention that very few, if any, maggots, or other creatures injurious to vegetation, are to be met with in ground which is dressed annually with artificial manures. These being judiciously applied to the soil, not only enrich but also purify it.

It has been shown by analyses that the potato contains nearly all the substances necessary for the nourishment of the human body—that it is a good supporter of respiration, and tends to the production of fat. There have been several good varieties of the potato raised in this country in recent years. The varieties I have found to be satisfactory in every way are:—

FIRST EARLIES.

1. Improved Ashleaf Kidney.—This is distinct from every other variety, and may be fairly described as the most reliable Ashleaf

Kidney in cultivation, being a very heavy cropper, of handsome appearance, good forcer, and one of the earliest to come in for use when planted in warm situations out of doors; the quality being everything that could be desired in an early potato.

- 2. Ringleader is a first-class early kidney-shaped potato, having the advantage of being white in the flesh. The foliage is quite distinct from that of the ashleaf type. It is, for an early potato, a robust grower and good cropper; producing tubers of excellent quality.
- 3. First Crop is another very excellent early kidney-shaped potato. It makes a very dwarf compact growth, is very productive, and of good quality.
- 4. Early Regent (Round) is a handsome, productive, shallow-eyed potato, of excellent quality.

Other good early varieties are Snowdrop (Kidney), Early Ashleaf (Kidney), Early Rose, and Hammersmith Kidney.

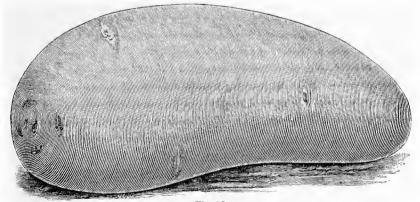


Fig. 27.

1MPROVED ASHLEAF KIDNEY.

SECOND EARLIES.

- 5. Windsor Castle is a seedling resulting from a cross between Beauty of Hebron and Fox's Seedling, and is distinguished by sturdy, erect habit, large dark-green foliage, and great productiveness and freedom from disease. The tubers are an elongated pebble shape, the flesh being white and of excellent quality.
- 6. Woodstock (Kidney) attains a good size, is very prolific, the tubers being handsome, clean, and very floury when well cooked. It is, moreover, a popular exhibition variety.
- 7. Chiswick Favourite is a very handsome new, white, round variety, introduced in 1885. The skin is white and rough, the flesh being also white and of good flavour, and it is a heavy cropper.

8. White Elephant (Kidney), in addition to the great size and fine appearance of the tubers, is a prodigious cropper, the roots being solid and of fine quality.

Other good second-early varieties are Early Border and Beauty of Hebron.

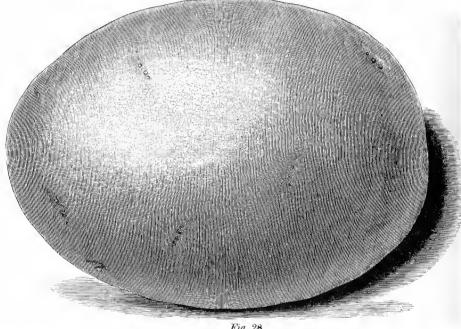


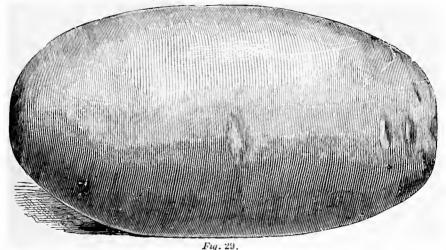
Fig. 28.
WINDSOR CASTLE,

MID-SEASON VARIETIES.

- 9. Kinver Monarch.—This valuable main-crop potato is suitable for either field or garden cultivation, is of strong growth, and produces an immense crop of large thers, which are flattish-round in shape, white, and of fine quality.
- 10. Holborn Reliance is a flattish kidney, with very smooth white skin, and few, scarcely perceptible, eyes. It is good in quality, very productive, and is one of the few varieties which was not affected by the potato blight of 1890.
- 11. Paragon.—This is a heavy cropper; the tubers are of good shape; the eyes level and scarcely visible, except for the rosy colour that surrounds them; the flesh, when boiled, is white and floury and of first-rate flavour.

Reading Russet, Schoolmaster, Vicar of Laleham, and Satisfaction are also very reliable potatoes for the main crop.

12. **Magnum Bonum** (Re-selected) is an excellent late potato, and (when not grown two or more years in succession in the same piece of ground) is a good disease resisting variety. The tubers, as the name implies, are large and good.



MAGNUM BONUM.

13. Reading Hero is a handsome good-all-round potato, and still maintains its popularity. It is a prodigious cropper, and not so liable to be attacked by disease as many other varieties are.

Other good late varieties of the potato are Scotch Champion, Imperator, York Regent, Victoria, and Dunbar Regent.

Soil.—A friable light loam is the most suitable soil for the potato. Heavy crops of clean-skinned tubers may also be secured from a dry, rather than wet, peaty soil, but the quality of such produce is not so good as that obtained from the description of soil first mentioned. Usually a freshly broken-up pasture resting on a chalky or gravelly subsoil, and enriched with short farmyard manure, yields heavy crops of potatoes of the best quality. The same piece of ground should only be planted with potatoes at intervals of three or four years; but should circumstances necessitate its being so cropped at shorter intervals, seed tubers obtained from a distance should be used.

Preparing the Ground.—There are various modes practised in preparing the soil for the reception of potatoes. Some cultivators spread the manure over the ground which has been well ploughed in the autumn, and plough it into the ground towards the middle or end of March or

early in April, according to circumstances, planting the sets in every third furrow. Others, at the time of planting, cut furrows with a plough fitted with a double mould board, spreading the manure along them prior to laying the sets therein, and covering them by splitting the ridges with the plough. In the case of freshly broken up downs or pasture fields, double ploughing or trenching should be adopted in the autumn. The general method employed by professional gardeners is to dig or trench the manure into the ground, drawing drills 5 or 6 in. deep, and from 18 to 24 in. apart, according to the variety of potato grown, planting the tubers about 9 in. apart between the sets, afterwards closing the soil over the sets with the draw-hoe. The practice of planting in holes made with a rather blunt iron-shod dibber is followed by some people, but the drills are preferable. In Ireland the practice of planting potatoes 7 or 8 in. apart on a surfacing of manure laid on widths of about 5 ft. on land previously in grass or stubble, with an alley from 15 to 18 in. wide between each ridge or bed, the sets being covered with soil dug out of the alleys, the top spit, grass-side down, forming the brow of the ridge, is a method of procedure as common among the peasantry and small farmers of that country as the results prove it to be bad. And the sooner this penny-wise and pound-foolish way of planting potatoes in the sister isle has become a thing of the past, the better it will be for everyone interested in the culture, supply, and quality of the "King of Roots." Even were the ground double-ploughed or deeply dug before planting the sets in the manner just described, the system is to be condemned on the score of insufficiency of room for the individual plants to develop themselves, and the absence of a free circulation of fresh air among the haulms. Hence it is that potatoes thus grown invariably become an easy prey to disease, in the event of an undue quantity of rain falling towards the end of July. Where it can be done, as it can be in gardens and allotments, it is best to manure the ground intended for potatoes the following year heavily for the previous crop. My own practice is, as soon as the onion crop has been harvested, usually towards the end of August, to manure and trench ground 2 or 3 ft. deep, tread the newly-trenched and liberally-manured ground over, and rake it level before planting it with July-raised cabbage plants, which remain in the ground for the next 19 months, clearing the ground of the cabbage stumps as early in March as the supply of greens can be dispensed with. The ground is then dug a good spit deep, the drills drawn, and the sets planted in them in the usual way. Thus treated, most satisfactory results are annually secured. Potatoes grown in ground fertilised with artificial manures are, as already stated, less liable to be attacked by disease of any kind than tubers in land dressed with farmyard manure. Five cwt. of artificials, consisting of 2 cwt. of guano, $2\frac{1}{2}$ cwt. superphosphate of lime, and a $\frac{1}{2}$ cwt. of muriate of potash, per acre, will be a good dressing for any ground not unusually deficient in fertility. The ground, having been dug or ploughed in the autumn, should be harrowed in spring, scattering the above mixture over the surface immediately before ploughing the ground, and planting the sets in every third furrow, as described above. In the case of garden and allotment planting, the artificial manures should be strewn along the bottom of the drills before planting the sets.

When to Plant.—Soils, situations, and varieties must not be lost sight of in determining the time of planting. In light soils and warm situations early and second-early varieties may, weather permitting, be planted with advantage early in February; but under conditions the reverse of these it would not be advisable to plant the sets before the end of the month. The mid-season or main-crop varieties, should be planted as early in March as circumstances will permit of the work being done, and the planting of the late varieties should be completed by the 25th of March. When the planting of late potatoes is deferred till some time in April, as I have known it to be, on the excuse that time "did not permit of its being done earlier," it is necessary to impress the fact that there is not sufficient time allowed in such late plantings for the due development and ripening of both baulms and tubers, which should be completed by the middle or end of September. The drills in which the potatoes are planted should run north and south

Distances between the Rows and Tubers.—This point, too, must be decided by circumstances. If the soil be somewhat poor and shallow, 15 to 18 in. between the rows will be ample space for the early varieties, giving from 24 to 30 in. for the main-crop and stronger-growing varieties, and from 9 to 12 in. between the sets. But in deep, well-conditioned soils from 6 to 12 in. more space should be allowed between the drills, and 3 in. more between the sets. If, however, the plants are given too much room to develop themselves the produce will contain a larger percentage of extra large tubers than cultivators generally will care for.

The Sets.—Some cultivators cut the large tubers into three or four pieces, each piece being furnished with a couple of stout, short, purple sprouts. But when the object is to propagate any particular variety as much as possible, the individual tubers should be cut into as many pieces as the number of eyes or short sprouts which they contain. Where there is no scarcity of seed potatoes, medium sized tubers having two short, stout sprouts retained on each for pushing into growth soon after being plauted are preferable. It is a good plan to cut a piece off the ends of these at planting time, and not before, this being to hasten the decay of the tuber when it has performed its proper functions;

for having supported the first growth, the sooner it is dispensed with the better. By sprouting the seed before planting, time is gained; and in thus limiting growth, crowding above ground is prevented and that underground promoted.

To Produce Young Potatoes at Christmas.—In order to do this, sufficient tubers of a good early kidney potato should be saved back at the spring planting, and spread out on a shelf or floor in a cool shed till the middle of July, when they should be planted in rows 1 ft. asunder and at 7 in. in the row, on an old hot-bed, or in a pit or frame from which frost can be kept out, and whose temperature during the months of October, November, and December can be maintained at over 40° Fahr. As soon as the haulms have attained a height of 3 or 4 in., the same thickness of light soil, of about the same degree of warmth as that indicated, should be laid on between the plants as a top-dressing, or landing-up. Sufficient air to ensure a sturdy growth should be given from the first; also sufficient water to keep the soil moist for the first eight or ten weeks; after which time the soil should be gradually allowed to become dry, with a view to "setting" the skin and giving flavour to the potatoes.

Summer Cultivation.—This consists in drawing 5 or 6 in. of soil up to the plants on either side as the growth advances. In the case of early plantings the work should be performed as soon as the haulms appear, more as a protection from frost than as a necessary support to the plants, and the keeping of the crop free from weeds. In carrying out this work, should any plants be noticed differing in size, colour, and form of leaf from those surrounding them, they may, without fear of making any mistake in the matter, be put down as "bastards." They should therefore have a stick put to each, to distinguish them from plants of the true stock, digging them up for use as soon as the tubers are fit for table, thereby preventing their getting mixed when selecting tubers for seed.

Taking Up and Storing the Crop.—No good, but the reverse, can result from leaving the crop one day longer in the ground than is absolutely necessary after the haulms and foliage have withered from natural decay and maturity. In the case of early varieties they are taken up as soon as they are fit for eating, in order to plant the ground thus cleared with cauliflower and other plants of the Brassica family. The potatoes must be stored in a dry, dark place; bearing in mind that the less light they are exposed to from the time they have been taken up until cooked, the better will be the quality when partaken of.

In taking up and storing potatoes in a general way, all those fit for table should be gathered first when dry, and stored by themselves in narrow pits of from 3 to 4 ft. wide, on high ground, taking care that the base of the pit is sufficiently raised that no water can enter, and,

if thought necessary, cut a track round the pit for the purpose of carrying off any moisture that may collect.

My late potatoes keep very well in narrow heaps, under which a little dry fern has been spread, and from 3 ft. to 4 ft. high from the base to the top of the heap, and covered first with dry fern, and subsequently with as many inches thick of light soil as will keep out frost. The fern, being of a light, open character, and not so likely to decay as straw, will admit of the escape of moisture arising from the massing together of the tubers, which will be more or less according to the condition of the tubers at the time of being pitted.

This evaporation will have ceased before it will be necessary to add a covering of soil to the fern. The potato ridge should be covered as the building of it is proceeded with, in order not to expose the tubers intended for table use longer than is necessary.

With those intended for seed this does not matter much; indeed, some people expose them intentionally, as the tubers are supposed to keep better on that account. It is a good plan to thatch the ridge of the pits with long litter, straw, fern, or heath, or any material that is likely to throw heavy rains off the apex of the pits. And in the event of severe frost, an additional covering of one or another of these protecting materials should be put on the ridges.

Where there is shed accommodation for storing potatoes for use in winter, light should be excluded from the tubers by covering them with mats, straw, or fern, increasing the quantity sufficiently to keep out frost.

Disbudding the Tubers.—Advantage should be taken of the first few fine days in February or March to uncover the pits, disbud the potatoes, and remove any bad ones that may be among them, thereby preventing the spread of the infection arising from the sound tubers coming into contact with the decayed ones. Only a small portion of the pits should be uncovered at one time, building the disbudded and otherwise sorted tubers into a fresh ridge in the track of the old one as the work is proceeded with, and covering them as before.

To Save Seed.—The potato apples which are most exposed to the sun should be gathered as soon as they are quite ripe, spreading them out in the sun for a few days till they begin to shrivel. They should be placed in a vessel of water until they become plump again, after which the seeds can easily be squeezed out, washed, and spread out in a shallow wooden drawer, or on paper, to dry; afterwards storing them away, with the name attached, for future use.

About 24 bushels of potato sets will be necessary to plant an acre of ground.

Insects and Diseases.—Potatoes are liable to the attacks of various insects, which prove more or less injurious to both tubers and haulms.

Wireworms are among the most destructive. Aphis rapæ attacks the potato as freely as it does the turnip; Thrips Minutissima and Smynthurus Solani also live beneath the leaves, and the Plant-bugs (Lygus solani, contaminatus, bipunctatus, and umbellatarum) pierce the leaves and abstract the sap; the caterpillars of Sphinx Atropos live upon them, and those of Agrotis Segetum and Exclamationis, and the maggets of the Crane-flies (Tiputa oleracæi, paludosa, and maculosa) attack the tubers.

The above-named insects are rarely found on potatoes growing in a freshly broken-up down or pasture field, enriched with artificial manures. Heavy dressings of rich farmyard manure have more to do with the production and multiplication of insects injurious to the crop (and the consequence thereof is disease on both root and branch) than any other cause. This fact is not so well known as it should be.

Potato Disease.—As previously mentioned, ground heavily dressed with rich animal manure tends to an over-luxuriant growth of haulun at the expense of the root produce; and such growth being longjointed, very dense, and full of sap, has a great tendency to produce fermentation, and consequent discolouration in the haulms and tubers. Hence, in the absence of heavy rains and a prevailingly low temperature during the interval from the last week in June to the middle of August, the appearance of the potato-disease. Savants devoid of a really practical knowledge on the subject may feel disposed to question—yea, to ridicule—the soundness of this opinion; but, he that as it may, the facts are the same-it is the treatment to which the plants are subjected which, if not actually causing the disease, predisposes the plant to its attacks. The Potato Murrain is said to be caused by a fungus called Peronospora Infestans, which first attacks the haulms and afterwards descends to the tubers. Quite so. But whence cometh the fungus? is the question which will naturally arise in the minds of our readers. It is in a great measure caused by the conditions indicated, and only awaits climatic conditions favourable to its spread to devastate the crop.

Remedy for Potato Blight.—The only remedy—if such it can be called—to prevent the disease affecting the entire crop is, to take it up as soon as practicable, selecting the good tubers from amongst the bad ones, and pitting them when quite dry. In the case of early varieties showing symptoms of disease on the haulms about the time the tubers have nearly attained full size, it is a good plan to pull the affected haulms up before there is time to communicate the disease through the stems to the roots.

Boiling Potatoes.—It may not be out of place here to briefly indicate how potatoes should be boiled. Put the potatoes in boiling

water with a little salt. Boil till nearly done, then drain off the water, re-place the lid, and stand them aside on the hot stove to finish in their own steam. They will then turn out like balls of flour. Many potatoes of good quality are spoiled through bad cooking. Potatoes may be dressed in various ways for table, but the one given above will be sufficient for this work.

RADISH.

(Raphanus sativus.)

THE radish is grown for the roots, but the seed pods, gathered while green, are sometimes pickled, and the seed leaves are occasionally used as a small salad. The radish is an annual plant, a native of China, and is said to have been cultivated in this country before 1548. There are several varieties of the radish in cultivation at the present day, some having long roots and others being turnip-rooted.

EARLY FORCING VARIETIES.

- 1. Wood's Superb Long Frame.
- 2. Extra Early White Turnip-rooted.
- 3. Extra Early Scarlet Turnip-rooted.

SUMMER VARIETIES.

- 4. Holborn Crimson Marble.
- 5. Long Scarlet.
- 6. White French Breakfast.

WINTER VARIETIES.

- 7. Black Spanish.
- 8. Japan or Californian.

I need only say that the above varieties are all good.

Soil.—The radish will succeed in any ordinary garden soil inclining to be light rather than heavy in texture, and moist rather than dry for summer crops, the conditions being somewhat reversed in the case of early and late sowings, which should also be made in a warm and sheltered situation, the ground being sloping, and fully exposed to the south. The ground should be deeply dug and lightly manured preparatory to

Sowing the Seed.—The seed should be sown thinly broadcast in beds from 4 to 5 ft. wide, with an alley 1 ft. wide between. The ground should be trodden and raked level previous to sowing the seed, covering the latter lightly with soil taken from the alley, breaking it fine before scattering over the seed, and afterwards making level with an iron rake. This done, place a piece of garden netting supported by forked sticks over the seed-beds as a protection from birds. The first sowing (where the convenience of a hot-bed is at hand) should be made about

the beginning of December, and afterwards at intervals of about three weeks up to the time that supplies of crisp radishes may be pulled out of doors from seed sown at the foot of a south wall about the middle of February, repeating the sowing made in February at intervals of the same duration mentioned above out of doors up to August, when a good sowing should be made in a shallow pit or frame having a sunny aspect, and provided with sashes for helping on the crop during the autumn months. A piece of ground having a west or east situation and somewhat moist is the moist suitable for the growth of radishes sown from the middle of May to the middle of July. The ground should at all times be moist in which radishes are growing, otherwise they will lack crispness, so that frequent waterings should be given at the roots during dry, hot summer weather.

To Save Seed.—None but the best plants, true to name, should be selected from one of the March sowings. Take np the necessary number of plants in May, and plant 2 ft. asunder in well-prepared ground, giving water to settle the soil, repeating the application until the plants have made fresh roots. The seed ripens in August and September, and must be gathered successively as it ripens. It should then be dried in the sun, rubbed out of the pods, and stored. It keeps good for four or five years.

RHUBARB.

(Rheum hybridum.)

This hardy perennial plant is to be found not only in the gardens of the rich, but in every cottage garden in England, but from some cause or other it is not generally cultivated in cottagers' gardens in Ireland and Scotland. It is a very wholesome vegetable. The leaf stalk, both in a natural and blanched state, make excellent tarts and pies, being a good substitute for fruit. They also make a jam almost, if not quite, equal to that made of greengage plums. The best varieties to grow are:—

- 1. Royal Albert.—This is a very early variety; the stalks are large, good in colour and flavour.
- 2. Victoria. This is not so early as the preceding variety, but with generous treatment the stalks attain to a great length and thickness, and is of excellent quality.

Other popular varieties are New Paragon, St. Martin's, Linnæus, and Giant.

Soil.—Although rhubarb will grow fairly well in any kind of moderately rich soil which is not stiff, the best results are obtained from plants growing in a light, sandy loam, into which a liberal

dressing of good, well-decomposed manure has been trenched from 2 to 3 ft. deep, or deeply dug.

Planting.—The plant may be propagated from seed, but the general and better way is to divide the roots and plant the divisions, having one or more buds on each, in rows 3 to 4 ft. apart, according to the variety, and at the same distance from plant to plant in the rows, making the soil firm about the roots in planting, keeping the buds or "crowns" of the individual plants level with the surface of the soil. This done, lay on a surface dressing about 3 in. in depth of half-rotten dung between the rows and the plants, and if dry weather prevails at the time, water to settle the soil. The plantations should be made in March before the plants start into growth.

After Treatment.—This consists in removing any flower stalks as soon as they appear on the plants, as well as weeds. No rhubarb should be taken from the plants the same year that they were planted, but the following summer they will yield abundant supplies. A fresh plantation should be made once every six or seven years in the manner described above, and a good dressing of manure should be forked into the ground between the plants annually to maintain them in a vigorous condition.

Forcing the Plants where they are Growing.—A few large pots, old boxes, or barrels placed over a like number of well-established plants—plants having large, well-developed crowns or buds in February—and covered with a mixture of warm dung and leaves in equal parts; early supplies of blanched crisp rhubarb may thereby be secured, covering the desired number of plants at intervals of three weeks until it can be gathered in the open.

SAGE.

(Salvia officinalis.)

This hardy, well-known, evergreen, shrubby herb is a native of the south of Europe. The leaves are much used for stuffings and sauces. There are four varieties grown, but the Common or Red Sage and Green Sage are the most esteemed. Sage may be raised from seed sown in heat, afterwards gradually hardening off the seedlings before planting them out in rows 18 in. assunder, and at 12 to 15 in. apart in the row, giving water to settle the soil about the roots; but the quickest and easiest way to propagate the plant is by means of slips pulled off the old plants with a little of the old wood adhering to the young shoots. Slip in April, May, or June. The lower leaves should be cut off, and the cuttings or slips inserted in rows 1 ft. apart, giving them a space of 6 in. between the cuttings in the row, watering through a spray distributor to settle the soil, and afterwards on bright afternoons to

freshen up the cuttings. The following April the young plants should be taken up with balls and transplanted at the distances recommended for seedlings. Some of the plants should be cut over when coming into flower, dried in the shade, tied up and put away in the dry for future use.

SALSAFY.

(Tragopogon porrifolius.)

This plant is cultivated for its long, fleshy root, which is white. It is a biennial plant, and a native of England. The roots are scraped, cut



Fig. 30. SALSAFY.

into pieces and steeped for a while in vinegar, before being boiled in water like parsnips, and served up with melted butter, white sauce, and in several other ways. The stalks are sometimes cut when 4 or 5 in. long and prepared as asparagus, and in this way they are very good.

Soil.—A light, rich soil of good depth and an open situation is suitable to the growth of salsafy.

Sowing the Seed.—The ground having been previously prepared, trodden and raked level, draw drills about 1 in. deep and 1 ft. asunder, as early in March as the ground will work, and in these sow the seed thinly, closing in the soil over the seed with the feet, treading it once more, and finally raking the ground over. If in request, two more sowings may be made, one in April and another in May. When a couple of inches high the plants should be thinned to 9 in. in the row, afterwards running the Dutch hoe between the rows a few times during the summer.

Taking up and Storing the Roots.—Towards the end of October the roots are fit for use, and

they should be taken up and stored in the manner recommended for beet-root on the approach of frost.

SAVORY.

(Satureja.)

There are two varieties of this plant cultivated—Summer Savory and Winter Savory. Summer Savory (Satureja hortensis) is a hardy

annual, and is a native of Italy and the south of France. It is propagated from seed, which should be sown in a warm border about the middle of April in drills about 1 in. deep and 1 ft. apart, thinning out the seedlings when a couple of inches high at 6 in. from plant to plant in the row. The thinnings, if necessary to extend the crop, may be transplanted at the distances indicated, watering at planting time and every afternoon, in the absence of rain, till the roots have taken to the soil. Cut or pull up sufficient plants to meet the demand as soon as they begin to flower, dry, and then tie up in small bundles and put away for use during the winter and spring months.

Winter Savory (Satureja montana).—This is a hardy evergreen, and is a native of Italy and the south of France. It may be propagated and grown in the same way as recommended for sage, and be used in the same way, as well as in salads.

SCORZONERA.

(Scorzonera hispanica.)

This hardy perennial is a native of Spain. It is very much like salsafy,



Fig. 31. SCORZONERA.

and is dressed and served up in the same way. The same cultivation recommended for salsafy will suit it in every way.

SEA-KALE.

(Crambe maritima.)

This hardy perential is a native of the British shores, and has been cultivated for more than a century, and has within the last twenty or thirty years become a favourite second-course vegetable on the rich man's table. The shoots or heads are used in a blanched state.



Fig. 32. SEA-KALE.

Soil.—Given a deep, sandy, loamy soil away from the shade of trees, well enriched with short manure, and results of the most satisfactory kind in connection with good cultivation may be looked for. The ground into which plantations of sea-kale are intended to be made should be trenched from 2 to 3 ft. deep, working in two or three layers of well-decomposed manure in the process of trenching. This should, if possible, be done in the autumn.

Planting.—The quickest as well as the best way to establish plantations of sea kale is to cut the extremities of the roots of plants taken up for forcing in December into lengths of 4 or 5 in., these being kept in a box intermixed with dry sand until March. When the condition of the ground will permit, the cuttings should be dibbled in

rows 18 in. apart, and at from 10 to 12 in. from plant to plant in the rows, and about 1 in. under the surface of the soil. Then lay on a mulching or surface dressing of short manure between the rows and plants to the thickness of 1 or 2 in. The only after attention necessary until the plants are ready for being forced in November or December is to keep them free from weeds and remove any flower stems as soon as they appear. Root cuttings, commonly called "thongs," treated as described, will furnish nice strong plants for forcing next winter. In raising plants from seed sow thinly in drills 2 in. deep and 12 in. asunder. Thin the seedlings out to 6 in. apart in the rows, and then mulch with rotten manure as recommended above. Plants thus raised will come in for transplanting next year after the crown buds have been removed. However, if there is no scarcity of kitchen-garden or allotment space, the seed can be sown in drills 18 in. apart at once, and the plants be subsequently thinned out to 10 or 12 in. in the row.

Forcing.—Having tried various methods of forcing sea-kale, I have practised the following for several years, as being the most efficient, simple, and economical way of securing the best results :- This consists of improvised boxes about 8 ft. long, 1 ft. wide, and of the same depth, the ends being 1 in. above the sides, as a means of keeping the board (of the same length and width as the individual boxes) forming the hid in position when covered with from 2 to 3 ft. thick of warm leaves, or long litter if the leaves are not obtainable. Where a good succession of sea-kale is required, from Christmas to the end of April or the middle of May, sufficient boxes to cover a given number of rows of plants at intervals of a fortnight or three weeks should be provided. When the leaves have decayed in the ordinary way in autumn, they should be removed to the rubbish heap, and a shovelful of wood or coal ashes (the former is preferable) be placed over and around each plant as a protection from severe frosts. This should be removed from the crown of the plants before placing the boxes over them for forcing. As the season advances, say, from March and ouwards, only sufficient leaves, leaf-mould, or other convenient and suitable material to exclude light and air need be placed over the boxes. Thus covered, providing the plants have been properly grown in a good open situation, as already advised, solid, well-blanched heads of crisp kale may be looked for a month or five weeks from the time of covering.

Taking the Crop.—After the plants or crowns have started into growth, they should be looked over once or twice a week, and all kale of table size (about 6 in. high) cut, and be stood on end in a vessel containing $\frac{1}{2}$ in. of water in a cool room out of the reach of frost till required for use. It is an easy matter to ascertain the progress of growth by removing the leaves and lids from a few of the boxes in the middle of the rows, afterwards carefully replacing the same. Of course

advantage should be taken of the warmest part of a fine day to perform the operation. In choosing a piece of ground for planting with seakale to be forced in the manner indicated, the question of the easiest way of conveying thereto the necessary quantity of leaves or litter for covering the boxes when forcing time arrives should not be forgotten. When the sea-kale has all been cut from each successive lot of boxes, the latter will then be set at liberty for placing over a fresh row or more of plants, covering those from which the crop had been taken with a few inches thick of leaves. These should be removed altogether in due time, and a good dressing of short manure be laid on between the rows and forked into the ground, afterwards removing weeds and any flower stems that happen to spring from the plants during the summer and early autumn months. Thus treated, the same plants will annually produce kale of the best quality for several years.

To Save Seed.—Allow a few of the strong plants to grow naturally, without cutting off the crowns or blanching. As soon as the seed is ripe gather the pods, dry them in the sun, and then put them into canvas or strong paper bags. The seeds keep better in their pods than out of them.

SHALLOT.

(Allium ascalonicum.)

This hardy perennial is a native of Palestine, found near Ascalon; hence the specific name. The bulbs, being milder in flavour and the odour less offensive than of garlic, are used in a raw state for flavouring steaks and chops, and in various other ways.

The Jersey is the best variety to grow.

The shallet may be treated in the same manner as recommended for garlic, and be planted in the same description of soil as early in February or March as the condition of the ground will permit of the work being done. The bulbs, however, should not be inserted so deeply in the ground as those of the garlic are; one-third of the bulb should be above ground. Towards the end of July the leaves will wither in the natural way. The bulbs should then be pulled up, spread out on hurdles or shutters to dry for a few days before being stored away like onions.

SPINACH.

(Spinacia oleracea.)

This hardy annual plant is supposed to be a native of Northern Asia. The varieties are not numerous and may be divided into two classes, the seeds of the Round, or Summer, variety being smooth, while those of the Winter, or Prickly, are prickly. Large succulent leaves of spinach,

boiled and served up with butter and in various other ways, constitute a favourite dish, and the plant being perfectly hardy, a supply may be relied upon, no matter however severe the winter may be, so that when King Frost has ruthlessly destroyed our ranks of broccoli, cabbages, and Brussels sprouts, the supply of winter spinach can be depended upon. The best varieties to grow are:—

- 1. Long-standing Round.—This does not run to seed so quickly as other varieties do. The leaves are of good size and substance, and dark green in colour.
- 2. Victoria Round is another excellent variety, continuing to produce large, good-quality leaves a long time before running to seed.
- 3. Market Favourite.—This new variety will be cultivated extensively when it becomes better known.
- 4. The Prickly, or Winter, is hardier than the Round, hence it is the variety depended upon for yielding winter and spring supplies.

Soil.—Spinach of the best description may be secured from seed sown in a deep light rather than heavy soil, enriched with short manure or artificials.

Sowing.—As early in February or March as the ground will work, sow a few rows of Long-standing in drills about 2 in. deep and 15 in. apart, in a warm situation, the ground having been previously dug, trodden, and raked level, afterwards closing the soil over the seed with the feet, treading and raking the surface of soil level as before. In order to keep up a good succession of fully-developed succulent leaves, sowings should be made at intervals of a fortnight or three weeks up to the end of August. The last two sowings should be made of the Prickly, or Winter, variety for furnishing the winter and spring supplies. The summer sowings should be made in a moist soil in preference to one inclining to be dry. One or more rows of spinach may be sown between ranks of peas, having a space of 3 or 4 ft. between them, without in any way interfering with the well-being of the peas. During a dry summer the crop should be watered frequently from the time the seed is sown until the plants are cleared of their leaves.

To Save Seed.—A few plants from an early sowing of the Round variety should be selected for producing seed, transplanting a few of the August-raised plants in spring to obtain seed of the Prickly variety, securing the plants to stout sticks until the seed has been harvested. The seed retains its vitality for two or three years.

THYME.

(Thymus.)

This aromatic herb is so well known to everyone, and its culture so simple and easy, as to require but brief mention being made of it here.

It is an evergreen shrubby herb, and is a native of the south of Europe. The leaves and tops of thyme are largely used in seasoning. The Common Thyme (Thymus vulgaris) is the variety chiefly grown for this purpose, although Lemon Thyme (Thymus citriodorus), on account of its very brisk and pleasant smell and flavour, is preferred for some dishes. The Golden Thyme (Thymus officinalis folius aureis) and the Variegated Thyme (Thymus variegatum) are used by some people with good effect as edgings to beds and borders filled with flowers.

Thyme does best in a light, rich, sandy soil, inclining to be dry rather than damp, and in a sheltered situation, commanding a south-west or east aspect. A west border is the best position for thyme and other herbs in the southern parts of England and Ireland, but in the northern portions of those countries, as well as in Scotland, a south border should be chosen. The plant may be propagated by seed, cuttings of the young tops in July, by rooted branches, or by dividing the old plants in March or April, and planting the divisions in rows 1 ft. apart and at the same distance from plant to plant in the rows, pressing the soil firmly about the roots in planting, giving water to settle the soil. Another method of procedure is to bend the branches of the plants down to the surface of the soil, giving them a slight twist in doing so, and then covering them with sandy soil, when they will readily emit roots. In due time the rooted cuttings or plants can be detached from the parent plants, and planted in the manner described above. The seed may be sown broadcast early in April in a bed of fine soil, covered lightly, raked level, and watered if dry overhead at the time, afterwards transplanting the seedling plants in rows as indicated above. When the plants are coming into flower, cut as much as may be deemed necessary, dry, and put it away for winter use.

TOMATO, or LOVE-APPLE.

 $(Lycopersicum\ esculentum.)$

The tomato is a tender annual, and is a native of South America. It is grown for its fruit, which is used in various ways—salads, sauces, and in some cases it is eaten raw as a dessert (vegetable) fruit, which doctors say is the most wholesome way to use the love-apple. The demand for tomatoes has increased amazingly during the last dozen years. From fifteen to twenty years ago the love apple was only to be met with in comparatively few large gardening establishments, and those principally in which French cooks reigned supreme in the kitchen. Now, however, so rapidly has the acquired taste for tomatoes spread, that they are grown, not only in every garden of any pretensions to the name, but also in most amateurs' and cottagers' gardens. And this can scarcely be wondered at, seeing that the plant is of comparatively easy culture and

its fruit most wholesome and appetising. The tomato is also extensively grown by market gardeners in this country, as well as in the Channel Islands, for supplying the markets in London, Manchester, Liverpool, and other large cities and towns in which ripe, firm tomatoes find a ready sale. It is a very remunerative crop. During dry, hot summers, heavy crops of tomatoes may be secured from plants planted at the foot of walls or fences having a south or west aspect, providing the shoots and leaves are kept well-thinned and stopped and the roots being fairly well supplied with water.

So highly is the tomato appreciated in some places, that a supply is required all the year round, and to meet this demand, small span-roofed or lean-to houses (the latter, if facing due south, being the most suitable one for winter work) have been specially erected. In such houses the plants, growing in narrow, shallow, and well-drained borders of sandy loam over the front hot-water pipes, ripen a fairly good crop of fruit during the winter and early spring months. There are a great number of good varieties of the tomato in cultivation at the present time. The most reliable are the following:—

- 1. **Perfection.**—This is a very prolific variety; the fruit is large, round, solid, and of a rich, piquant flavour; the colour is bright red; the fruits are very handsome in appearance.
- 2. Sensation is a very robust-growing and productive variety, the plants setting their fruit at every joint. It is flattish-round in shape, perfectly smooth, of a rich, deep colour and excellent flavour.
- 3. Market Favourite is the result of a cross between Ham Green Favourite and the old Italian Red. It is a very prodigious cropper, of medium size, good shape and colour.
- 4. Hackwood Park Prolific is another very excellent variety. The fruits are large, fine in appearance, smooth-skinned, and of a bright scarlet colour.
- 5. Ham Green Favourite is a very free-bearing variety; fruit medium size, smooth and handsome.
- 6. Blenheim Orange.—This is a new free-bearing variety, producing good-sized, handsome, golden-coloured fruits, which are very luscious, juicy, and pleasant in flavour; in fact, it is the sweetest tomato that I am acquainted with.

Other good varieties are Harefield Grove, Hathaway's Excelsior, Vick's Criterion, the old Trophy, Chiswick Red, Acme, and Chemin Rouge.

Raising the Plants.—The tomato is propagated from seed, and by cuttings a couple of inches long taken off the young growths of established plants and inserted in small pots, drained, and filled with fine, sandy soil, watered, and placed in heat to root. But, all things being considered, the former method of procedure is the best, and the one

generally practised. Where there is glass accommodation at hand for fruiting a few or many plants, as the case may he, in April, May, June, and July, seed should be sown early in October. In order to avoid the plants being subjected to a check in the process of being re-potted off in the seedling state, it is better to sow a few seeds in the centre of each 3-in, pot, which should have been previously crocked and filled to within an inch of the rim with fine, sandy loam, covered lightly with fine soil. Water through a fine rose, cover the soil with a piece of glass, and place the pots on a shelf near to the glass in any warm house or pit, where, when the seedlings-only one of which should be left in each pot-appear through the soil, the glass should he removed and plenty of fresh air admitted during favourable weather to promote a sturdy growth in the plants. For raising plants for out-of-door culture, a pinch of seed should be sown towards the end of February or early in March, in the manner described above. The thinnings, if necessary to extend the stock, may be potted singly into 3-in, pots and watered to settle the soil about them. Where it can be done, the plants should be grown on to a good size by shifting them into larger pots before finally planting them out-of-doors as the larger the plants are at the time it is safe to plant them outside, the sooner they will hear fruit, and continue to do so until nipped by frost.

Planting.—Where there are walls and fences having south and west aspects, the plants, having been gradually hardened off beforehand, may be planted from the middle to the end of May, according to the season and district. In planting give the individual plants a few shovelfuls of a mixture consisting of three parts sandy loam and one of short manure, making this moderately firm about the roots, afterwards giving water to settle the soil and laying on a surface-dressing of short dung. The plants, if only having one stem, should be planted 1 ft. apart at the foot of the wall or fence, securing the shoots thereto by means of shreds and nails, allowing sufficient room in the looped shred for the individual shoots developing themselves.

After Treatment.—The chief points to be observed in tomato culture, to be successful out-of-doors as well as under glass, is to avoid crowding of the shoots and leaves, and to keep the roots supplied with water when necessary. When the above cultural points are duly attended to, in connection with bright, warm summer weather, success is certain. No stimulants, in the shape of liquid manure or surfacedressings of artificial manures immediately before giving water at the roots, should be applied thereat until the plants have set their fruit, when they may have liberal supplies, and, if large fruit be desired, the clusters should be thinned out, leaving, of course, all the best-shaped and most even-sized fruit. If grown under glass, let the night temperature from this stage of the plaut's growth range from 55° to

60°, and by day 65° to 70°, running it up to 85° with sun heat, and plenty of atmospheric moisture at closing time in the afternoon. When the plants are in flower, preserve an airy, dry atmosphere in the house or pit in which they are growing, fertilising the open flowers about mid-day with some soft substance, such, for instance, as a feather or a rabbit's tail tied on to the end of a short stick, until a crop of fruit is thereby secured.

Tomato Disease.—If the cultural details given above regarding the thinning and stopping of the shoots and leaves, the pinching back to one joint of the lateral growths, and the stopping of the leading shoots and secondary growths at one joint beyond the clusters of fruit are duly attended to, so as to fully expose the principal shoots and the fruit to the influence of the sun, there need be no fear during ordinary summer weather of the plants being attacked with the so-called disease. I may say at once, as I have on more than one occasion stated in the Horticultural Press, that the discolouration and subsequent withering of the shoots and leaves are, in my opinion, to be attributed, when these symptoms appear on out-of-door plants during a dry, warm summer, not to the epidemic, but to the overcrowding and consequent fermentation of the soft, sappy shoots and leaves—no doubt the result of inattention or pressure of work on the part of the cultivator. The disease—a disease which, I aver, may be guarded against, and warded off in the manner indicated.

Remedy.—Thin the shoots and leaves as recommended above, cutting off all discoloured leaves and as many of the affected shoots as can be dispensed with, and dust over the remaining affected main shoots and leaves with a mixture of lime and soot (passed through a $\frac{1}{4}$ -in. sieve) when the plants are damp. Those desirous to obtain fuller information on this subject should consult Mr. W. Iggulden's book.

TURNIP.

(Brassica rapa.)

The turnip is a native of Britain, as well as of many other parts of Europe. It is a hardy biennial, and has been cultivated for its roots for centuries; and the leaves are also frequently used as greens in spring, and very good and tender they are, too, when used quite young. The Swedish Turnip (Brassica campestris) is the hardiest of all cultivated varieties. The most reliable garden varieties are:—

1. Early White Strap-leaved is of very quick growth, and excellent for forcing and early use.

2. Purple Top Strap-leaf is another excellent and very handsome early turnip.

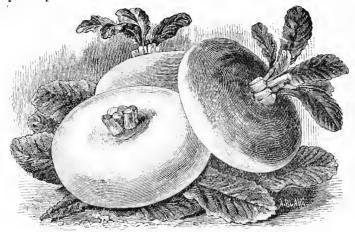


Fig. 33.
PURPLE TOP STRAP-LEAF TURNIP.

- 3. Snowball is the best all-round summer turnip in cultivation. The flesh is, as the name implies, as white as snow, solid, and mild in flavour. It is of handsome shape, with short top and a single tap-root. Other good early and summer varieties are Extra Early Milan, Jersey Lily, and Yellow Dutch.
- 4. Red Globe is a very superior variety for either summer or winter use.
 - 5. Chirk Castle is another good hardy variety.

Other good winter turnips are Orange Jelly and Green Top Stone.

Soil.—Given a light, sandy, loamy soil, of average depth and fertility, together with judicious treatment, and turnips of the best description may be obtained therefrom. Stiff soil is most unsuitable to the production of good-quality produce, but such land may be rendered congenial to the requirements of the turnip by the addition of chalk, leaf-mould, wood-ashes, and such like ingredients, these being well incorporated with the natural soil some months before sowing the seed.

Preparing the Ground.—In the matter of manure, I prefer, in a general way, artificials to farmyard manure. Surface-dressings of wood-ashes and soot, applied to the ground immediately before sowing the seed, tend greatly to the production of a weighty crop of clean roots. If well-decomposed manure is applied to the ground, it should be deeply dug into it as soon after the summer crops have been cleared

off in autumn as possible, leaving the surface quite rough—the better to be acted upon by the frosts. And if the soil is of a stiff, tenacious kind, it should be ridged up in the process of digging; the ingredients already described, having been previously scattered over the surface of the ground for the purpose indicated above, levelling the ridges when the ground is dry enough to tread on without adhering to one's boots, in February or early in March. This done, tread as much of the ground over as it is desirable to sow for first crop, making it level with a rake before drawing the drills 1 in. deep and 1 ft. apart for the reception of the seed.

Sowing.—Any time between the middle of February and the middle of March that the condition of the ground will permit of the work being done, make a small sowing in a dry, warm situation, sowing the seed thinly in the drills, afterwards closing in the soil, treading and raking it over as before. Then place over the seed a breadth of smallmeshed garden netting, supported by forked sticks as a protection from the birds. Sowings in proportion to the demand should afterwards be made at intervals of from three weeks to a month, up to the middle of July in cold (northern) districts, and up to the middle of August in warm (southern) districts. The last sowing but one should be much more extensive than any of the preceding ones, as there need be no fear of the crop running to seed, and, moreover, the winter and early spring supply of turnips depends almost entirely upon the weight and quality of the produce resulting from this particular sowing, the last sowing being made on the chance of the weather during the autumn months being favourable to the growth of the crop. It will be well to sow two or three varieties at each sowing, to ensure a good succession. A cool moist situation is preferable to a warm dry one for making the May and June sowings in. The seed may also be sown broadcast, but the method of procedure recommended above is preferable.

After Treatment.—This will consist in giving frequent waterings, in the absence of rain, from the time the seed is sown until the roots are fit for use; in thinning out the plants when between 1 and 2 in. high to about 4 in. in the row at first, afterwards drawing every alternate plant before they touch; and in keeping them free from weeds, and occasionally stirring of the soil between the rows, as much with a view to stimulating growth in the plants as destroying seedling weeds.

Taking the Crop.—During the summer and autumn months the crops, as a matter of course, are drawn as soon as they become fit, and as required for use, the largest bulbs being pulled first.

Storing the Crop. —In view of the ground becoming frost-bound, sufficient roots for culinary purposes to extend over a period of three

weeks or a month should be taken up, topped, and otherwise trimmed a little, and then stored in a cool shed out of the reach of frost, covering the bulbs with a little fern, dry litter, or mats, the remaining portion of the crop remaining in the ground for future use, that is, assuming the situation to be a dry, warm one; but should it be the reverse of this, the crop should be taken up on the approach of severe weather, and be pitted and protected like potatoes, or stored in sheds as advised above. In storing the entire crop in this way, the tops only should be removed, as the bulbs keep better with the roots attached.

To Save Seed.—If desirous to save your own seed of any special variety of turnip, only one variety should be saved in any one year, taking care that no plants of cabbage, kale, or any of the Brassica family are grown for the same purpose at the same time, as they would probably cross with one another to a disadvantage. None but the best-shaped bulbs should be selected, and planted 2-ft. apart in an open situation for producing seed. This should be gathered when ripe, and duly stored away in bags. The seed retains its vegetative powers for four or five years.

Insect Attacks.—This wholesome, very useful, and much-appreciated vegetable, when properly cooked, is, as a rule, subjected to the attacks of a greater variety of insects than any other crop. If preventive and remedial measures are not taken in good time, the ants run away with great numbers of the seeds, and as soon as the seed leaves appear above ground they are attacked by the Flea Fly or Beetle (Altica nemorum), which devour the young, tender leaves, causing the plants to die. The Nigger Caterpillar, the offspring of Athalia spinarum, attacks the plants in a more advanced stage of growth. The above and several other species work sad havoc among the crops in some places, but they give very little, if any, trouble when the ground has been prepared and surface-dressed before sowing the seed in the manner described above. The successful cultivator always remembers the old proverb, "Prevention is better than cure." If the young plants are dusted over with a mixture of lime and soot while damp, it will save them from the attacks of the Flea Fly. Soil rendered sweet and fertile by the application of artificials, soot, wood-ashes, &c., is not likely to contain many insects injurious to growth, if any.

VEGETABLE MARROW.

(Cucurbita ovifera.)

THE vegetable marrow is a tender or half-hardy annual, and is a native of the warm parts of both hemispheres, especially India. There are

several good varieties in cultivation at the present day, several of which I have specially tested, with the result that I give prominence to the following:—

1. Longford Custard.—This is a medium-sized marrow. The fruit is pyriform in shape, cream colour outside, the flesh being a rich yellow, and the flavour, when cooked and served up with melted butter, is delicious. The plant is a good grower and very prolific. [This variety was introduced by the author of this work.]

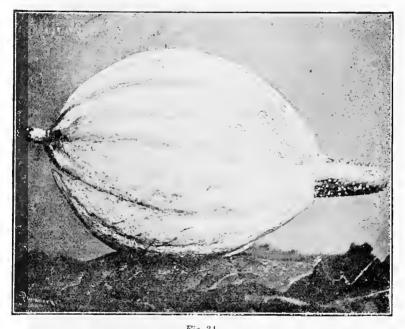


Fig. 34. LONGFORD CUSTARD MARROW.

- 2. Large Long White is a short-jointed and free-bearing, good-all-round variety.
- 3. Moore's Cream is of handsome appearance, but lacks the quality and flavour of the preceding varieties.

Other popular varieties are Pen-y-byd, Long Green, and Long Yellow. As a rule, the fruits are fit for use when the flowers drop from their end.

For cultural details, see Gourds.

SHORT CHAPTERS

ON

CULTURAL WORK IN THE KITCHEN GARDEN AND ALLOTMENTS.

CHAPTER I.

BLANCHING.

This word, as applied in connection with the culture of vegetables, means the whitening of the leaf or leaf-stalk of the plants to which the term is applied. Blanching is effected in plants by growing them in darkness for a period ranging from ten days to a fortnight, according to circumstances. Celery is blanched in the course of its growth outof-doors by drawing the leaf-stalks together at the top and covering them with a few inches thick of soil on both sides up to the heart of the individual plants, repeating the operation two or three times during the progress of growth, Cardoons are blanched in a similar manner as celery. Lettuce plants are blanched by tying the leaves together near the top when nearly full grown with hands of matting; some varieties of the cos lettnee, owing to the infolding habit of the leaves, blanch naturally. Endive is frequently blanched by covering the plants where they are growing with fern, pieces of slate, and boards; but in the event of wet weather setting in, too large a percentage of the plants become a prey to damp to admit of this method of procedure being profitably practised. Endive and lettuce plants are also blanched by lifting them from frames and transplanting in shallow boxes, pots, &c., and putting them in cellars and such-like places, from which daylight can be shut out, putting fresh plants in at short intervals, say, every fortnight or three weeks, to keep up the succession. sea-kale are obtained in the same way, the stools, or roots, being put into pots or boxes, and soil packed round them as soon as they have shed their leaves late in autumn.

CHAPTER II.

DIGGING AND RIDGING UP THE GROUND.

The above-mentioned words are used in connection with the process of turning up the soil with the spade—a method of procedure followed for many centuries up to the present time in gardens and allotments, the plough being used for the same purpose in fields. In digging a piece of ground the first thing to be done, after it has been dressed with a few inches thick of the best manure at command, is to take out an opening one spit deep of soil at the lowest end and wheel it to the other end at which the digging is to be completed, or, if the strip of ground is extra wide, an opening half the width can be taken out and tipped down on the other half close by, for completing the digging with at the same end; but it is better, when the piece of ground is not inconveniently wide, to dig it the full width at the same time, as the surface can be kept pretty level in the process of digging.

The cultivator, be he man or boy, should keep well over his spade. He should hold the crutch of the handle in one hand, gripping it half-way down with the other, and then drive it straight down its full length into the ground, and turn the spit of soil topside down into the previously-made trench, breaking the soil fine with the spade and working the manure down to the bottom as the work is proceeded with. Where the soil is shallow, and that portion of it resting upon the subsoil is poor, it will not be desirable to bring it to the top; it should simply be loosened, the manure intermixed with it, and covered with the surface soil as before. The depth of such ground should be increased by frequent additions of any kind of soil, roadside parings and such-like, that can be obtained, being made.

Ridging up the Soil.—This method of cultivation is frequently had recourse to by those having a heavy and uncongenial soil to deal with. In digging the ground in the autumn, after the removal of the summer crops, it is simply thrown into ridges as the work proceeds, and so left to be acted upon by the weather until within a few days of the time for cropping it in spring, when advantage should be taken of dry weather to level it.

CHAPTER III.

HOEING AND RAKING.

These two operations are so closely connected in their practical application as to render it necessary to part them here. The handles of both Dutch hoe and rake should be sufficiently long to admit of their being used efficiently with but a slight bending of the body on the part

of the operator. The blade of the Dutch or thrust hoe, if made of good steel, will maintain a good sharp edge while in use. It should rest quite level on the surface of the ground to be hoed. Whether it is used with a view to cut down young crops of weeds, or to accelerate growth in young crops of vegetables by stirring the soil between the rows, it should be maintained in that position and thrust with more or less force, according as the soil is heavy or light, 1 or 2 in. underneath the surface soil, taking care in doing so to keep clear of the young plants on either side. In the case of cutting down weeds between fruit trees and such places it will only be necessary to push the hoe a little underneath the surface soil. Dutch hoes range in size from 3 to 9 in. Draw hoes are about 9 in. wide and 4 in. deep, having width of blade. a short neck and circular eye, in which the handle is fixed. They are used chiefly for drawing soil up to rows of plants of cauliflower, cabbage, broccoli, peas, and beans, as well as for drawing drills 3 in. deep in which to plant and sow the above crops. They are also used for cutting down weeds in rough, stiff land, and for thinning and cleaning of field turnips.

Rakes.—These, like the Dutch hoe, vary in size, ranging from six to twenty teeth in width. They are used in producing a smooth, even surface on seed beds before and after the seeds have been sown, and for raking weeds off freshly-hoed ground, smoothing over gravel walks, &c. The top portion of the handle should be held by the left hand, spanning it with the right about $2\frac{1}{2}$ ft. lower down, and allowing the handle to pass freely through it up and down in the process of raking, bearing in mind that the real object of raking is to produce a level, clean surface when finished, making each stroke of the rake run into the preceding one, thereby producing, when the work is finished, the appearance of a continuous stroke. This finished style of workmanship can, however, only be attained by practice and experience.

CHAPTER IV.

HOT BEDS-HOW TO MAKE AND USE THEM.

Antiquated as this subject undoubtedly is, it is, nevertheless, but imperfectly understood by amateurs and the holders of small gardens generally, who would, I know by experience, like to produce their own supplies of forced asparagus, rhubarb, sea-kale, carrots, and potatoes, as well as to raise and grow melons and cucumbers and various other kinds of plants, did they but understand the method of procedure. Therefore, being cognisant of the want of knowledge on this subject on the one hand, and the willingness to learn on the other, I shall endeavour to describe as briefly and clearly as I can the manner in which the details

necessarily leading to a successful issue should be carried out. The first step to be taken in this direction is to collect and throw together to heat sufficient stable dung and leaves to make one or more beds. using rather more leaves than dung. The leaves of oak or chestnut trees are the best for this purpose. These should be turned over twice within a fortnight to sweeten and allow of the rank steam escaping therefrom before making it into a hot-bed. The ground on which the hot-bed is to be made should be higher than that surrounding it, so as to prevent the accumulation of water. Where this is not the case, a few fagots or a load or two of brick rubble or clinkers placed on the site of the hot-beds will answer the same purpose. In order to allow of the hot-beds subsiding a couple of feet, they should be made 6 ft. high at back, 5 ft. high in front, and 2 ft. wider and longer than the frame which is to be placed thereon; but in the case of a hot-bed being made large enough to take two or more frames longitudinally, a space of 18 in, between each will be ample. In forming the hot-beds the fermenting material should be well trodden as the work proceeds. especially so 3 ft. along the centre, which, moreover, should be rather higher than the other parts, inasmuch as it is the hottest part of the bed, and consequently the first to decompose and subside. Having placed the frame or frames, as the case may be, on the hot-beds, sufficient fermenting material to make the depth of the back part of the frame correspond with that of the front should be placed therein, following this with a couple of inches depth of decayed manure. Thus prepared, the bed is ready for placing closely together thereon asparagus and rhubarb plants any time after they have lost their foliage naturally. sav. from the middle or end of November, until supplies of asparagus and rhubarb can be obtained out-of-doors naturally, covering the former with about 5 in. depth of light, fine soil. For potatoes and carrots, add a layer about 9 in. thick of light garden soil and sifted leaf-mould, in the proportion of three-parts of the former and one of the latter, mixing thoroughly therewith a few shovelfuls of fresh soot, more with a view to rendering the soil distasteful to worms and insects than fertilising it. This, being spread evenly over the short dung, will result in the production of clean, good quality roots.

In making hot-beds for melons and cucumbers a different line of procedure must be followed, as a higher bottom and top heat is necessary to promote a healthy growth than is required to produce first-rate crops of asparagus, potatoes, carrots, rhubarb, and radishes. This being so, the hot beds intended specially for melons and cucumbers should be made just large enough to hold the frame, and in making them a few layers of old pea-sticks, if to spare, may with advantage be placed across the beds for the purpose of communicating heat from the freshly-made-up linings to the interior of the bed and frame. When

the frame is placed on the bed, put a shell inside it, which should be 6 in. shallower than the frame. The shell can be easily made by measuring the interior of the box or frame and making it 1 in. less all round, and, as I have already stated, 6 in. shallower, nailing the battens on the outer side of the shell, so that when it is fixed in the frame there will be a space of 1 in. between that and the frame, thus supplying a means of top heat from the linings and bed. The linings should be made up at intervals of a week or a fortnight, according to the nature of the weather and the temperature of the dung and leaves employed, as well as the character of the subjects growing in the frame or frames, and for which purpose a reserve heap of the fermenting materials indicated should be at hand. I will now show how frames on hot-beds may be profitably used by planting and sowing in them the following crops:—

Potatoes.—Early varieties of potatoes may be planted two days after the soil has been placed in the frame, in rows 1 ft. apart and at 7 or 8 in. asunder in the rows. From the time the potatoes appear above the soil until they have completed their growth, sufficient fresh air should be admitted to the frames to ensure a sturdy growth in the haulms, and as soon as they have made a few inches of growth a like depth of soil should be placed between the rows. Potatoes thus planted early in December will yield a supply of young ones fit for the table early in April, when it should be continued from produce obtained by successional planting. They will require little, if any, water at the roots during the interval. If the soil be not considered sufficiently rich for the production of moderately good-sized tubers, a sprinkling of Peruvian guano, or any other good fertiliser, may be advantageously incorporated with it.

Carrots.—Similar advice is applicable to carrots. Improved Early Nantes Horn and others of same type are the most suitable for early use. Sow the seed thinly in drills 1 in deep and 1 ft. apart, and between these may be similarly sown rows of Wood's Frame Radishes. The soil should then be closed over the seed and be made moderately firm with a board or the back of the spade. A pinch of cauliflower, cabbage, and lettuce seed may be sown thinly in these frames at the same time as the carrots without in any way interfering with the welfare of the latter crop, inasmuch as the seedling plants could be pricked out in a pit containing a gentle bottom heat or under a few old lights in a sunny horder as soon as large enough. The radishes also will have been removed for salading before the carrots require more room. As soon as large enough to handle they should be thinned out to 2 in. in the row, and afterwards be thinned out as required for use. These frames, like those containing potatoes, must have sufficient fresh air

admitted from the beginning to prevent their occupants making a weakly growth.

Watering.—When the surface of the bed becomes dry, give tepid or lukewarm water sufficient to reach the roots. When asparagus and rhubarb roots are placed closely together, and covered with fine soil in the manner described above, tepid water should be applied to settle the soil among the roots. When the "grass"—asparagus—has pushed a few inches through the soil it should be cut, and stood on the ends in a 6-in. flower-pot resting in a saucer of water placed in a house where the temperature does not fall below 45° until required for use. When the condition of the soil indicates dryness, give sufficient tepid water to thoroughly moisten both soil and roots, and ventilate sufficiently from the time the asparagus appears through the soil until it is cut, to prevent its making a spindly growth. My experience of covering with a few inches thick of sifted leaf-mould is that the "grass" is thereby improved in quality, being cleaner, better blanched, and crisper.

Beds which are specially made for melons and cucumbers should have a layer 5 or 6 in. deep of sawdust or leaf-mould placed over the short dung, in which to plunge pots containing cuttings of various kinds of plants, as well as to raise young melon and cucumber plants, together with numerous other kinds of plants for the embellishment of the green-house and beds and borders devoted to the culture of flowers.

The treatment of melons and cucumbers in frames on hot beds are treated of in another part of this work under the heading of their respective names.

CHAPTER V.

LEVELLING GROUND.

Although this subject is an important point in the curriculum of practical gardeners and land stewards, I will only touch very briefly on it here, simply contenting myself with saying that all hilly pieces of ground should be roughly levelled by removing a few spits of soil from each hill or unduly high part of the ground surface, and scattering it over the intervening spaces before being dug, completing the work in the process of digging. If a plot of ground is higher at one end or one side than it is at the other, and it is desired to have it quite level, of course a little of the soil should be removed from the high part, and be scattered over the lower part. If a plot of ground should be 6 in higher at one end than it is at the other, all that is necessary is to take off 3 in deep of the soil at the high end and add it to the low end. In the case of making a slope or bank, whether the base and summit, that is, the bottom and top parts of the slope, are to be quite level or merely levelled to correspond with the ground running

alongside of it, the soil of the intervening space should be trodden and raked evenly over, so that when completed a straight-edged board would touch the surface of the soil the entire width and length of slope. It should then be turfed over with turves about 1 in. thick, 12 in wide, and from 18 to 36 in. long, placed closely together, patted down with the back of a spade, and, in the event of dry weather prevailing at the time, watered every afternoon for a week, by which time fresh root action will have taken place. If to be had, turf free from daisy and plantain roots should only be used; and if this is not easily obtainable, sow thereon a mixture of grass and clover seeds on a calm day towards the end of March, and afterwards rake them well in and roll to produce a firm, smooth surface.

CHAPTER VI.

Mulching.

This consists in laying on a few inches thick of rotten or half-rotten manure on either side rows of peas, beans (of all sections), cauliflowers, and between strawberry plants, raspberry canes, and about all newly-planted trees and bushes. This application preserves the roots of all the plants indicated (as well as many others when similarly dressed) in a more equable condition as regards root temperature and moisture than could be otherwise secured. It prevents frost and cutting winds from affecting the surface roots in winter and spring, and in summer the mulching not only conserves moisture at the roots, thereby prolonging the producing powers of the plants, but each time water is applied it washes the strength of the manure down to the roots. Therefore, as soon as rows of peas, beans, and such-like crops are landed up and staked they should be mulched.

CHAPTER VII.

PRICKING OUT.

This term is applied to the process of thinning and transplanting young plants of cabbage, cauliflower, broccoli, kale, Savoys, Brussels sprouts, and lettuce into beds or rows at from 3 in. to 6 in. asunder as soon as they are large enough to handle, and before they get crowded in the seed beds. The setting-stick should be about 6 in. long, ½ in. thick, and pointed at one end. The work is best done in dull, showery weather, because the plants do not then experience so much check in the process; but should the weather be dry at the time, the beds from which the young plants are to be pricked out should be well watered a short time before drawing the plants, as also should the ground into which they are to be pricked, as they will then draw and transplant better, afterwards watering to settle the soil about the

roots. In pricking, let the roots rest in the bottom of the hole the same depth in the ground as they were before, then press the soil in at one side with the setting-stick so as to make the plants moderately firm at the roots, without subjecting them to undue pressure, or bending them on being pricked out. If a slight shading in the shape of mats or old cloth of some sort or other, supported by short sticks, be afforded the young plants during bright weather for a few days until the roots have taken hold of the soil, it will be of great advantage to them. Even a few green branches stuck into the ground on each side of the beds or among the plants would greatly hasten the re-establishing of the roots.

CHAPTER VIII.

ROTATION OF CROPS.

The object and study of everybody in possession of a cottage garden and allotment should be how to render the same as productive and profitable as possible. This can only be done by dressing the ground liberally with the best manure at command, good cultivation, and by giving due consideration to the requirements of and the conditions under which each and every kind of crop grown succeeds best, noting at the same time the particular plots of ground which yield the best results, together with the special requirements and character of the crop immediately preceding it. Therefore, the cultivator must have a plan of operation in his mind's eye to go by, as chance preparation of the soil for a haphazard crop is a method of procedure not to be relied upon. On the contrary, in trenching a piece of ground he should make up his mind as to the kind of vegetables he intends growing in it the four following years. Thus: first year, cabbage, Brussels sprouts. and cauliflower (with ranks of peas and beans between the latter); second year, early and second-early varieties of potatoes (simply digging the ground after the cabbage stumps had been removed to the rubbishheap), which will be taken up in time to admit of a crop of spinach. turnips, lettuce, and such-like quick-growing, surface-rooting crops heing taken off the same ground that season; third year (digging a good dressing of short manure well into the ground beforehand), carrots. parsnips, and beet-root—tap-rooting crops—and celery; fourth year, broccoli, winter greens, Savoys (with rows of peas and beans between). leeks and onions, the latter crop being sown in the plot previously cropped with celery. Plantations of rhubarb, asparagus, strawberries. and sea-kale, which remain in the same piece of ground for three or more years, may be made in liberally-manured and deeply-trenched ground which had been previously cropped with any of the vegetables previously mentioned.

CHAPTER IX.

THE RUBBISH HEAP.

This is quite a necessary adjunct to all gardens. It should, however, be situate in an out of the-way corner, and be rendered as unsightly and inoffensive to the organ of smelling as possible by keeping it tidy and turned over frequently, not only with a view to allowing of the escape of the vitiated ammonia arising from the massing together and decomposition of vegetable matter, but the quicker to convert it into fairly good manure, which a well-rotted accumulation of weeds, sweepings of walks, and vegetable refuse undoubtedly make. The turning over of this more or less fermenting mass should be done in the morning, when the wind is blowing from the house and approach thereto, thereby carrying the noxious gas or smell arising therefrom with it. Of course the rubbish-heap should consist of three sections, side by side; one composing the fresh rubbish, and the other two that in the decomposed and decomposing stages respectively.

CHAPTER X.

SAVING SEED.

In order to save seed of cabbage, cauliflower, celery, broccoli, Brussels sprouts, winter greens (including kales and Savoys), lettuce and endive, select early in March a few plants of the best types of any of the several kinds enumerated from autumu-raised plants and plant them in a warm situation, making the soil firm about the roots and giving water thereat to settle the soil about them. Put a stick to each plant for support, and in due time protect the seed pods from the ravages of birds with a piece of small meshed garden netting. Soon after the seed pods and stems on which they are borne turn yellow, in August or early in September, they should be cut off, spread out on a cloth to dry for a few days, afterwards rubbing out the seed, cleaning, and putting it away in bags for future use with the names written thereon. of beet-root may be saved the same way, planting the roots at the foot of a wall or fence having a south or west aspect. Only one kind of any of the cabbage or brassica family and beet should be grown for seed in any one garden at the same time, otherwise the species would be likely to get crossed. But either lettuce or endive (not both) and any one of the cabbage tribe may be grown in the same garden at the same time without any fear of their getting crossed by the agency of bees or the wind. Peas and beans are ready for harvesting when the pods turn yellow. Seed of asparagus is saved by cutting as many of the berried stems as may be required in October and hanging them up in a dry shed for a few weeks, afterwards picking off the berries, squeezing out the seed into a vessel of water, washing, drying, and putting away in bags till required.

CHAPTER XI.

SOWING SEED.

I am well within the mark in stating that annually seeds of cabbage. cauliflower, broccoli, Brussels sprouts, lettuce, endive, turnips, and peas are sown five times as thick as they should be. This, no doubt, is done with the best intentions ou the part of the sowers. At the same time the results in the crowding, and consequential stifling and attenuating, of the plants go to show very conclusively their want of experience and timely forethought. If the seeds are obtained from a reliable seedsman there need be no anxiety as to their being good. This being so, they should, in the case of seed sown broadcast, be scattered very thinly over the seed-bed, or seed-pans, covering them lightly with soil from the alleys or narrow path on each side of the beds, raking them over and patting the soil with the back of the spade, to compress seed and soil. Thus sown the seedlings will have room to develop three or four small leaves without touching one another, when they should be thinned out, and the thinnings be pricked out in small beds or finally transplanted. In the case of sowing parsnips, turnips, spinach, beet, carrots, &c., in drills, the seed should only be sown a little thicker in the row than the plants are intended to be when thinned out. This will allow for any mishaps that may occur between the sowing and thinning time.

CHAPTER XII.

TAKING UP AND STORING ROOTS AND TUBERS.

Beet-root, carrots, and parsnips should be wintered somewhere out of the reach of frost and excessive moisture. If packed closely together in sand in a dry shed, as is frequently the case, they lose their freshness, which is most desirable should be preserved. The following is the most simple and effectual method of storing roots that I am acquainted with, and which, moreover, is within the reach of every cottage gardener and allotment holder. It is as follows: the roots having been taken up carefully with the assistance of a four or five-tined fork before they get injured by frost, take out an opening about 15 in. deep and the same width in a dry corner of the garden, having, if obtainable, a south or west aspect, and proceed with the digging of the ground in the ordinary way. When the trench has been filled and the

ground levelled, cut the soil straight down the whole width of the plot being dug, and then place two or three rows of the roots perpendicularly in the opening thus made, and proceed with the digging again until the roots are all covered, hurying the crowns or tops of the roots about 1 in. under the surface of the soil, continuing the operation in the manner indicated until all the roots are stored. The leaves of carrots and parsnips should be cut off within an inch or so of the crown when being taken up, but the beet leaves should not be cut off—they will protect the roots from sustaining injury from several degrees of frost; but, in the event of its being severe, a protection of dry litter or bracken will be necessary. Salsafy and scorzonera may also be wintered in the same way, and will, like the roots indicated, be found superior in flavour and appearance to those which have been wintered on the dryshed-and-sand principle.

Potatoes should be stored in narrow pits from 3 to 4 ft. wide, and about the same height from the base to the top of the ridge, in a dry corner of the garden or allotment where water is not likely to lodge at any time. Put a little dry fern, if obtainable, under and over the tubers, and subsequently cover them with as many inches thick of soil as will keep out frost. The fern, being of a light, open character, and not so likely to decay as straw, will admit of moisture arising from the massing together of the tubers, and which will be more or less according to the condition of the tubers at the time of being ridged. This, however, will have ceased before it will be necessary to add a covering of soil to the fern. The potato ridge should be covered as the building of the latter is proceeded with, in order not to expose the tubers intended for eating longer than is absolutely necessary; with those intended for seed this does not matter so much. Where shedroom cannot be afforded for spreading the seed tubers one or two deep. to prevent them pushing into growth before planting time arrives, they should be pitted by themselves. Turnips and Jerusalem artichokes may be stored in the same way as potatoes, and, where the accommodation exists, they may be stored in sheds from which frost and light can be kept from the roots.

CHAPTER XIII.

THINNING CROPS.

This simple but important operation should be performed as soon as it can be ascertained beyond doubt which are the best plants to leave for the crop. In thinning it will be advisable to only thin the plants out to half the distance which it is intended to leave them at first, afterwards pulling out every other plant when they have started well into growth, pulling out any weeds that may be among the plants at

the same time. This work, like pricking out and transplanting, should be done in showery weather. If the thinning is not done at the proper time, a lanky growth and probably mildew will follow.

CHAPTER XIV.

TIDINESS IN THE GARDEN.

The observance of tidiness and good order in gardens and other outof-door departments, like indoors, should not only redound to the credit of those in charge, but to a very great extent enhances the value of and adds to the pleasure derived from the same by the owner. All decayed vegetable matter, in the shape of withered cabbage leaves, haulms of potatoes, and such-like, should be removed as quickly as possible to the rubbish-heap, as their presence becomes not only offensive to the eye but also to the nose. The box-edging should be kept free of gaps and be neatly trimmed once a year-early in autumn. Box makes the best of all live edgings for garden walks. The latter should be kept free from weeds and fallen leaves and dirt from the adjoining plots of ground. With this object in view, several scrapers should be fixed close to the walks in convenient parts of the garden to scrape the dirt off the feet before going on to the walks. Pieces of hoop iron, cut into 12-in, lengths and let into slits their own depth sawn in two stout sticks, about 2 ft. long each and driven 15 in. into the ground, make capital scrapers. In short, neatness and good order combined should prevail everywhere, there being a place for every implement necessary for gardening operations, and every implement should be put away clean in its proper place.

CHAPTER XV.

TRANSPLANTING.

I need hardly say that this word means to remove and plant in another place. In every case the plants should be transplanted before they get crowded in the beds, and the work should, for the reason given under the heading of "PRICKING OUT," be done during showery weather. Before taking up the plants, the soil should be loosened about the roots, with a four or five-tined fork, to prevent them being injured in the process of drawing. They should be planted the same depth in the soil as they were before, in holes made with a setting-stick (about $1\frac{1}{2}$ in thick) in the bottom of drills 3 in deep, and the soil made firm about the roots and collar of the plants in planting, afterwards giving water to settle the soil about the roots, repeating the application every afternoon in the absence of rain until the roots have pushed well into the soil.

CHAPTER XVI.

TRENCHING.

Every inch of cultivated kitchen garden and allotment should be trenched once every four or five years. The results will amply repay the labour thus involved. This is how it is done: the necessary quantity of manure having been previously wheeled on to the plot of ground to be trenched when it is dry, open a space at one end from 2 to 3 ft. wide, according to the depth of the soil; wheel the excavated soil to the other end of the plot to fill in the last trench with. bottom spit or substratum is poor, only loosen and level it, putting over it a good thickness of short rotten dung, say, from 3 to. 5 in. thick. This done, proceed to open the next trench, by putting the top spit of soil over the dung in the bottom of the one thus made, breaking it with a spade as the work is proceeded with; follow this with another layer of manure above the first layer, then another spit of soil, together with shovellings, giving a third application of manure, and over this the remaining portion of the soil to form the depth indicated. The bottom of this trench should also be loosened, and the operations carried out as in the previous ease, until the whole plot of ground is trenched. The sooner the trenching is done in the autumn or early winter months the better, so as to afford ample time for the soil to settle down, as well as for its exposure to the weather before cropping time arrives.

CHAPTER XVII.

WATERING.

In order to secure the best results in the way of crops from cultivated kitchen-garden and field plants, the soil should be kept uniformly moist about the roots during active growth, that is to say, during the months of May, June, July, and August. If ranks of peas become unduly dry at the roots in summer, they will become a prey to the attacks of mildew, and their yield of produce will be poor in quality and of short duration. Cauliflower plants from the same cause will become "button-hearted"—which means the production of worthless heads or "flowers"—and lettuce plants, instead of developing into large, solid heads of crisp and tender leaves, result in the production of thin, loose heads of leathery leaves. Scarlet runners and French beans and spinach are other crops which suffer materially if not kept in a growing state (moist) at the roots during dry, summer months.

The best time to water all kinds of plants, both in the kitchen and flower gardens, is late in the afternoon or in the cool of the evening, because then there is no powerful sun heat to dry up the water almost as soon as it touches the earth, as is generally the case when watering

is done between the hours of ten in the morning and four o'clock in the afternoon during the summer months. It is better, however, to give a good watering once or twice a week, so as to thoroughly moisten the soil about the roots of the plants, than to give it in driblets every evening; that is to say, giving only sufficient water to moisten the surface of the beds without touching the roots—a kind of allaying thedust watering.

The notion entertained by many people, to the effect that if plants, either in the flower or kitchen gardens, are watered overhead in the heat of a summer's day the leaves get scorehed by the action of the sun on them while damp, is a wrong one. Nature herself affords ample proof of the correctness of this assertion every summer when the sun frequently shines forth with full power on the wet leaves of plants immediately after a smart shower of rain, without in any way injuring them.

CHAPTER XVIII.

WEEDING CROPS.

This simple, though absolutely necessary, cultural detail in the cultivation of agricultural and horticultural crops generally is, like the thinning, pricking, and transplanting operations, best done in showery weather while the ground is damp, as the weeds then come up easier and without disturbing the soil much about the roots of the plants being weeded. However, in the case of pulling up any strongly-rooted weeds that may be in close proximity to the plants, it will be necessary to press a finger or two on the ground on either side of the stems, and draw them up between the slightly-distended fingers without disturbing the roots of the adjoining plants in doing so. But, in the first place, those who are put to do this simple kind of work should be made to thoroughly distinguish the weeds from the several kinds of plants which they are put to weed; otherwise, serious mistakes may arise.

THE CULTURE OF FRUIT.

No cottage garden can be considered complete without it has a due complement of apple, pear, cherry, and plum trees, gooseberry and current bushes, and raspberry and strawberry plantations. varieties of the several kinds which are known to succeed best in each district should be borne in mind by the purchaser in sending his fruittree order to some nurseryman having a reputation for the growth and sending out of healthy trees true to name. To such a man the intending purchaser, who is not quite sure as to the most suitable of the several kinds and varieties to grow, may safely leave the selection: (1) simply giving the names of the sorts he may already have; and (2) stating how many trees each of apples (for cooking and dessert), pears, plums, &c., he requires, together with the character and depth of the soil in his garden or orchard. Those having gardens enclosed by a wall or boarded fence should grow one or more trees of peaches and nectarines, and May Duke cherries on the south and west sides, Victoria, Golden Drop, and Old Greengage plums, Marie Louise and Chaumontel pears on the east side, and Morello cherries on the north side. trees of every description, including bush fruit and strawberries, do best in a deep, yellow loam, resting on limestone or a gravelly subsoil, and inclining to be heavy rather than light.

Before proceeding further, it may be as well to give a short list of the most desirable varieties of the respective kinds of fruit to grow, and which are likely to do well in any fairly good soil and situation.

THE APPLE.

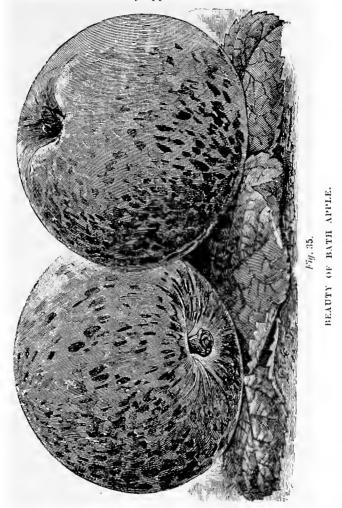
(Pyrus malus.)

THE apple, termed in its wild state the crab, is indigenous to Britain and to most warm and temperate parts of Europe. It will succeed in climates too cold for the pear, plum, and cherry, and blossoming later than any of these (May), it therefore generally escapes the frost, which frequently destroys the crops of the fruit trees indicated.

DESSERT VARIETIES.

1. Beauty of Bath is an acquisition to the list of dessert apples. It is of medium size, round and flattened, the ground colour a yellowish green, beautifully striped and spotted with crimson towards the sun;

the flesh is firm and pale yellow, and it has a brisk sub-acid flavour superior to that of other early apples.



- 2. Irish Peach, rich and melting; one of the best early.
- 3. Cox's Orange Pippin, first-rate, medium size, and handsome.
- 4. Red Astrachan, highly-coloured, handsome fruit; great cropper.
- 5. King of the Pippins, great bearer, fine size, good quality and shape.
 - 6. Cockle Pippin, rich, aromatic, of excellent quality.
 - 7. Nonpareil, very rich, good bearer, and keeps well.

CULINARY VARIETIES.

- 8. Keswick Codlin, a great and sure bearer, very early, and of good quality.
 - 9. Lord Suffield, large, productive, and early.
 - 10. Hawthornden, a good cropper; fruit large and good.
 - 11. Warner's King, of enormous size and good quality.
- 12. Bramley's Seedling, a good cropper, and a valuable late keeping fruit.
 - 13. Blenheim Orange, large, very handsome, and of fine quality.

APRICOT.

(Armeniaca vulgaris.)

This low deciduous tree is a native of the temperate parts of Central Asia. It was introduced into Europe from Armenia upwards of a century before the Christian era, but there is no record of its having been grown in Britain before the year 1562. The following are the two best varieties to grow:—

- 1. Moor Park is a good cropper; fruit large and of rich flavour.
- 2. Hemskerk is hardier than Moor Park; fruit large and good.

THE CHERRY.

(Cerasus.)

Some varieties of the cherry are natives of England, and others of the south of Europe, or introduced into it from Asia Minor. The following are reliable and profitable varieties to grow:—

- 1. Early Rivers, large, shining black, very handsome, fine flavour.
- 2. Frogmore Bigarreau, heavy cropper, free grower, and good quality.
 - 3. Governor Wood, very large, and of fine flavour.
- 4. May Duke, best adapted for walls; good cropper, and full of flavour.
 - 5. Black Eagle, a grand cherry, hardy, and very prolific.
- 6. Morello, good for north walls; fruit used for preserving and tarts.

THE CURRANT.

(Ribes.)

THERE are three sorts of the currant—the Red (Ribes rubrum), the White (R. alba), and the Black (R. nigrum). They are all indi-

genous to Britain. The varieties enumerated below will serve every purpose:—

- 1. Red Dutch, growth spreading and vigorous, free cropper, dark red.
- 2. Red, Ruby, a prodigious bearer, free grower, berries large and crimson.
 - 3. Red, Fay's Prolific, an American variety, of fine size and quality.
- 4. Black, Baldwin is a very prolific and hardy variety; fine large fruit, which is produced in large clusters.
- 5. Black, Carter's New Champion is a decided improvement on the old varieties.
- 6. White Dutch is a good cropper; clusters and berries large, and flavour good.

THE FIG.

(Ficus carica.)

Is a native of the south of Europe, Northern Africa, and Western Asia, and, like the apple, it is intimately associated with the Scriptural records of our first parents' sojourn in the Garden of Eden. There are several varieties of the fig in cultivation, but the two varieties named below are amply sufficient for this work.

- 1. Brown Turkey.—This is an abundant bearer, good grower, fine in size and flavour.
- 2. Marseilles is a large white variety, fine in quality, and a good cropper.

THE GOOSEBERRY.

(Ribus grossularia.)

This deciduous shrub is a native of Britain and other parts of Europe. The following varieties may be depended upon:—

White.

- 1. Whitesmith.
- 2. Champagne.
- 3. Keepsake.
- 4. Cheshire Lass.

Yellow.

- 5. Yellow Rough.
- Golden Drop.
- 7. Greengage.
- 8. Green Hedgehog.

Red.

- 9. Coe's Late.
- 10. Warrington.
- 11. Ironmonger.
- 12. Red Rough or Scottish.

THE NECTARINE.

(Amygdalus persica.)

The nectarine, like the peach, is supposed to be of Persian origin. It is extensively grown in Asia, Europe, and America. The following are good-all-round varieties:—

- 1. River's Early (New).—Fruit very early, large, highly coloured, and full of flavour.
- 2. Lord Napier, the best second early; fruits large and handsome, and of fine flavour.
 - 3. Elruge is a very excellent and highly-coloured nectarine.
- 4. Pine Apple.—The fruits of this popular variety are large and handsome, orange flesh, and full of flavour.

THE PEACH.

(Amygdalus persicà.)

THE varieties named below ripen from the middle of July to the beginning of October:—

- 1. Alexander, medium-sized, very early, and of good quality and fine colour.
- 2. Hale's Early is a good grower, very early, melting, and full of flavour.
 - 3. Early Grosse Mignonne, juicy, rich, and of fine flavour.
 - 4. Dymond is a large, delicious, and melting peach, and fine colour.
- 5. Violette Hative, large, rich, handsome, fine quality, and good grower, and grandly coloured.
- 6. Sea Eagle is the finest late variety in cultivation, the fruits attaining to great size when the tree is not over-cropped and is generously treated at the roots, especially when swelling its crop.

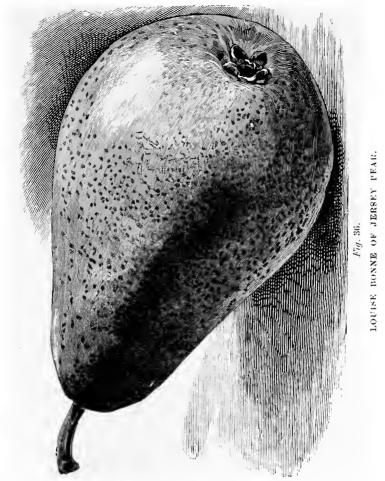
THE PEAR.

(Pyrus communis.)

THE pear is a native of England, as well as most temperate parts of Europe and Western Asia. It was cultivated more than 3,000 years ago by the Greeks and Romans. There are many varieties of the pear in cultivation, of which the following are some of the best:—

- 1. Doyenne d'Été, very early, small, and good.
- 2. Jargonelle, early, very tender, and melting.
- 3. Beurré de l'Assomption, early, large, and good.
- 4. Williams's Bon Chretien, large, tender, buttery, melting, and juicy.
 - 5. Beurré d'Amanlis, large, melting, buttery, and highly flavoured.
 - 6. Louise Bonne of Jersey, deliciously flavoured.

- 7. Compte de Lamy, hardy, good bearer, fine flavour.
- 8. Doyenne du Comice, very large and handsome, fine quality.
- 9. Beurré Diel, fine, large, handsome, well-flavoured pear.



- 10. Marie Louise, large, buttery, melting, and juicy; a grand pear.
- 11. Glout Morceau, large, good bearer, and fine flavour.
- 12. Chaumontel, melting, rich, and very highly flavoured; requires a wall.
 - 13. Josephine de Malines, a prodigious cropper; fine late pear.
 - 14. Beurré Rance, juicy, melting, delicious, and fine late pear.
 - 15. Catillac, best for baking and stewing; great bearer, large fruit.
 - 16. Uvedale's St. Germain, largest pear grown; stewing.

THE PLUM.

(Prunus domestica.)

This low, deciduous tree is a native of Britain, as well as most other parts of Europe and the mountainous parts of Asia. The following twenty-one varieties, ripening from the early part of July to the middle of October, are thoroughly reliable for the purposes indicated:—

DESSERT VARIETIES.

- 1. Early Favourite.—This is a great bearer, very early, fruit nearly black, pleasant flavour.
- 2. Early Prolific is a prodigious cropper, dark purple, very early, and good.
 - 3. July Greengage is a large, fine, early greengage of fine quality.
 - 4. Old Greengage is a most reliable and excellent variety.
- 5. Orleans, excellent cropper, fruit purple black, good size, and fine quality.
- 6. Kirk's is a large, round, dark-purple plum, handsome, and very rich.
 - 7. Golden Gage, excellent, very handsome; suitable for walls.
- 8. Coe's Golden Drop.—This is a great and sure bearer, fruit large, handsome, and full of flavour; should be given a west wall.
 - 9. Mitchelson's is a great bearer, of fine quality, and hardy.

KITCHEN VARIETIES.

- 10. Belgian Purple is a great bearer, fruit large, purple, and good.
- 11. Diamond, dark purple, very large, and fine quality.
- 12. Victoria, large, red, sure bearer; one of the best.
- 13. Pond's Seedling, red, very large, egg-shaped, and handsome.
- 14. Archduke.—This is a fine, large, purple plum, and a heavy cropper.

FOR ORCHARD PLANTING.

- 15. Early Prolific is a fine bearcr, either in tree or pyramid form.
- 16. Victoria.—The safe-cropping variety does well in any form.
- 17. Mitchelson's is also most suitable for standard or pyramids.
- 18. Wilmot's Orleans, a very useful market variety; good cropper.
- 19. Pershore Yellow Egg. This is a profuse bearer, fine apricot colonr.
- 20. Prince of Wales is a good market plum, pink colour, sweet and rich.
- 21. Farleigh Prolific Damson is a great bearer, and of good quality, and very hardy.

THE RASPBERRY.

(Rubus idæus.)

The raspberry is a deciduous shrub, with perennial roots and a biennial stem, a native of Britain and most of the temperate parts of Europe. There are several varieties of the raspberry in cultivation, of which the following are four of the best:—

- 1. Superlative, producing large conical-shaped fruit of fine quality.
- 2. Antwerp Red, a finely-flavoured and productive variety.
- 3. Antwerp White, delicious flavour; the hest and only white worth growing.
 - 4. Prolific, large, and great bearer, and fine flavour.
 - 5. Belle de Fontenay (autumu-bearing), large, and full of flavour,

THE STRAWBERRY.

(Fragaria.)

The strawberry is indigenous to various parts of the world, including Britain and other countries in Enrope. The following six varieties include the best and most profitable:—

- 1. Royal Sovereign, large conical-shaped fruit; ripens before Noble.
- 2. Noble.—This is a very early, large, and taking variety.

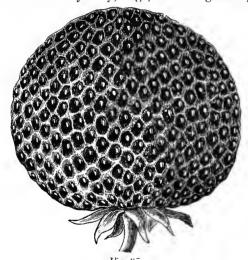


Fig. 37.
NOBLE STRAWBERRY.

- 3. Keen's Seedling, a good hardy, early variety, good size and flavour.
- 4. Sir Joseph Paxton, large and handsome, conical in shape, fine colour, and rich flavour.

- 5. President, fruit cockscomb shape, large, firm, and first-rate in flavour.
- 6. Oxonian (late), a very large, late, and valuable variety; enormous cropper, refreshing sub-acid flavour.

PREPARING THE HOLES AND PLANTING, &c.

In the matter of tree planting there is no better illustration of the "penny-wise and-pound-foolish" way of doing things than that of squeezing the roots of trees and bushes of any description which we wish to grow into healthy, fine specimens into small, badly-prepared holes. Therefore, in order to give the trees a good start in the beginning, plant them in holes ranging from $2\frac{1}{2}$ to $3\frac{1}{2}$ ft. in diameter, according as the trees are small or large, and about 3 ft. deep, including 6 or 9 in. deep of drainage in the bottom in the shape of brickbats, clinkers, or stones, broken on the top. If the natural soil of the garden, orchard, or allotment is not of the character described at page 128, it should be replaced by some of the best obtainable, in which to plant the trees the same depth as they were in the ground before, cutting back any damaged portions of the roots with a sharp knife in planting, and making the soil firm about them. If the situation be

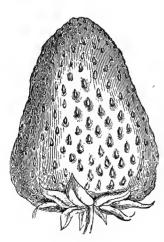


Fig. 38.
SIR JOSEPH PAXTON
STRAWBERRY.

such that the roots of the trees are likely at any time to get submerged, the depth of drainage should be increased, that is, raised above the possible water line, and the trees be planted on mounds. course, the holes for trees being planted against walls or fences should partake of the shape of a half-circle. Wall trees, to be trained horizontally or fan-shaped, may be planted about 15 ft. apart. Standard trees of pears and apples should be given a distance of from 20 to 25 ft. (according to the fertility and texture of the soil) between the rows, and at the same distance from tree to tree in the rows, planting the trees in each succeeding row anglewise to those in the preceding row, and alternate rows of gooseberries and currants, at about 6 ft. from one another in the row, should be planted between those of the pears and apples,

the trees of the latter being kept dwarf so that the fruit can be gathered with the assistance of a short light ladder or pair of steps. A row or two of strawberry plants can very well and profitably be grown on

either side the gooseberry and currant bushes. Pyramidally-trained trees of the apple and pear should be planted at from 10 to 15 ft. from one another, and ranks of raspberries at 4 ft. asunder (these should run north and south), allowing 6 or 9 in. between the canes in the rows, planting strawberry plants in rows 24 in. asunder and at the same distance from plant to plant. Make the plants firm about the roots in every case in planting, and do not bury them any deeper in the soil than they were before. If every farmer in this great country of ours, whose requirement for a good supply of wholesome fruit is annually increasing, were to devote twenty or more acres of his holding to the cultivation of hardy fruits on the basis indicated in this work, he would derive better interest annually for the money so invested than he could or has hitherto been able to secure from the same acreage cropped with corn or roots.

After one and all of the trees and plants indicated have been planted, a mulching to the thickness of 2 or 3 in. of rotten dung should be laid on over the roots of the individual trees and between the rows of raspberry and strawberry plants, to prevent frost penetrating them; this done, a few canfuls of water should be given at the roots of each tree, to settle the soil about them, the strawberry and raspberry plants also receiving sufficient water in the direction indicated.

Pruning and Training.—Upon the manner in which these simple though important operations are performed depends almost entirely the building up of fruitful, and consequently profitable, trees and bushes. The pruning saw and pruning knife should not be indiscriminately used; on the contrary, those engaged in the work should have a clear object in view in operating on young maiden trees, namely, the formation of large fruit-bearing trees in as short a time as possible. For this reason, the young leading shoots of standard, pyramid, and bush trees should be pruned back to within from 5 to 8 in. of their bases after they have shed their leaves, towards the end of October or early in November; each of these pruned back shoots will push forth four or five young growths the following spring. These, when likely to become crowded or to cross each other in growth, should be pinched back to within about 2 in. of their origin. This will result in the formation of fruit buds; and, with the same object, in addition to promoting a balance of growth in the trees, the strong leading shoots should annually be pinched two or three times during the summer and early autumn months, and the weaker ones once. The check thus given to the flow of sap will not only result in the formation of (roundheaded) fruit buds, but also in that of plumping the intervening (pointed) wood buds -a circumstance which will naturally lead to the production of better growths the following year than could otherwise be obtained. Soon after the trees and bushes have shed their leaves the side shoots

should be cut back to within one eye or bud of the main growths or branches, pruning the leading shoots back to within from 12 to 18 in., according to their strength, of the previous year's growth, until the trees and bushes have attained to the desired sizes, when they should be all cut close back to one bud annually. Never allow the branches to become crowded, as this very undesirable state of things would end in moss-covered, barren trees.

Root Pruning.-If the trees do not bear satisfactory crops of fruit, root pruning must be had recourse to. This is done by opening a trench at from 2 to 4 ft. (according to the size of the tree to be operated on) from the stem of the individual trees, working the soil out from around and underneath the roots with a five-tined fork and shovel, cutting away all roots within the prescribed space of the trench, as well as any strong ones that may have pushed straight down into the subsoil underneath the trees, with a sharp knife. This will result in the production of a network of young fibres—the kind of roots which really tend to build up and sustain healthy fruit trees. The underground growth of fruit trees should, in a great measure, correspond with that of the top, that is, the roots in number and size should be iu proportion to the spread of branches. When the roots are pruned, return the soil, if good, to the trench; if not good, replace it with a mixture of the best loam at command, adding thereto a little short manure and old lime rubble.

Wall Trees. The first spring after planting young trees at the foot of walls or wooden fences, when the sap begins to rise, bend the unpruned shoots towards the ground and secure them to the wall with nails and shreds in that position, the bend starting from the point whence the first of the young shoots are desired to proceed, say, 4 or 5 in. from the bottom of the individual shoots. The eheek thus given to the flow of sap causes a sufficient number of wood buds to push from each shoot to form a good-sized "fan-shaped" tree the first year after planting. Of course, as soon as the buds nearest the base of the individual shoots so treated have pushed into growth the uails should be drawn. the shoots (main shoots) spread out on the wall, after the manner of a hand and distended fingers, and secured thereto with nails and shreds, leaving sufficient room in the latter for the development of the branch, the young shoots indicated above being trained at proper distances over the intervening space, and a judicious course of pinching of the after growth should be pursued, as already recommended, during the summer and autumn months, with the obvious object of plumping wood buds, forming spurs or fruit buds, and promoting a balance of growth in one and all of the trees.

Pruning and Training Established Wall Trees.—The peach, nectarine, and Morello cherry trees demand the same kind of pruning and training,

and, by reason of the great number of shoots which have to be manipulated, they require more time and skill to train them properly than either the plum or pear. They only require the shoots to be thinned out a little, leaving, of course, as many young growths as are necessary, and cutting back the old ones to their base, and also any front shoots that may have been produced during the summer to one wood bud. Strong leading shoots should be cut out where it can be done, in order to ensure a proper balance of growth on the tree, that is, an equal distribution of the shoots over the space prescribed to each tree on the wall, and the shoots about 4 in. apart, radiating at the same angle from the centre on either side. These distances will admit of one young shoot of the following year's growth being laid in between each pair of branches with a birch or hazel twig during the spring and summer, pinching close back, as indicated above, all growths proceeding from these as they appear. The middle of January will be soon enough to prune trees of the peach and nectarine, shortening back weak shoots to a wood bud next above the top fruit bud, or to three buds located together; the middle one, being a wood bud, will in due time push into growth. About the beginning of the year the nails securing the young shoots to the wall or fence should be drawn, the object being to retard their flowering time as much as possible by allowing a constant current of air to pass between the shoots and the sun-warmed wall; and, with the same object in view, the process of re-nailing the trees should be deferred until a week or two before the flowers begin to open. In pruning trees of the pear, plum, and apricot, the shoots should be spurred or cut back to the wood bud nearest to their bases, and the old spurs, where too close together on the individual branches, should be thinned out well, as anything approaching crowding of the spurs (around and on which are located the fruit buds) and shoots, whether on wall or standard trees and bushes, should be looked upon as a great evil in fruit culture, and therefore to be avoided. A space of from 6 to 8 in. should be allowed between the shoots or branches of plums and apricots, giving pears from 9 to 12 in. space from branch to branch.

Figs.—In the matter of pruning and training of fig trees it is wise to defer the operation till the trees begin to push into leaf, which, in the southern counties, is the first week in May in ordinary seasons, and a week or two later in the northern parts of the United Kingdom. By pruning the trees then the wounds bleed very little, by reason of the opening leaves drawing away the risen sap, which, if the trees were pruned earlier in the season, would flow through the wounds; moreover, it can then be easily ascertained which of the shoots are best furnished with embryo fruit. These, as a matter of course, should be retained, cutting clean away as many of the old and less fruitful branches as are

not required to cover the wall space allotted to each tree, giving a space of 6 in. between the branches, which should be trained fan-shape, laying in one shoot of the current year's growth between these, and pinch the points out of any extra strong shoots when about 18 in. long, and the weaker ones at 2 ft., to promote a balance of growth in the individual trees, as well as the formation of fruit buds for the following year, and the swelling of the fruit then on the trees.

Pruning Raspberries.—Soon after the crop of fruit has been gathered from the canes cut the latter back to the ground line, to allow the canes of the current year's growth to duly develop and ripen for producing fruit the following year. The autumn-bearing raspberry (Belle de Fontenay), which bears on the current year's growth, should be cut down to the ground in February, and the young canes springing from the old stools should be thinned out to 6 in. in the row, and all shoots afterwards appearing should be persistently removed, in order to secure strong, well-ripened canes for fruiting from the end of August until cut down by frost.

Propagation of Fruit Trees and Bushes.—This is effected in various ways—by seed, grafting, budding, cuttings, and layering of the shoots. Apples and pears, and sometimes plums, apricots, and cherries, are increased by means of grafting young healthy shoots on like-conditioned stocks of the crab, hawthorn, and quince, the Mussel-white Pear and stocks raised from plum stones being generally used for grafting and budding the plum, cherry, apricot, peach, and nectarine on.

Grafting.—Of the several modes of grafting, that one known under the names of whip-grafting, splice-grafting, or tongue-grafting is undoubtedly the best. The nearer the stock and the scion are to each other in point of size, the neater will be the union. The scious should consist of young, healthy, short-jointed, well-ripened shoots of from 9 to 12 in. long, and should be selected about the end of January and be buried a few inches in the soil until about the middle of March, when they should be engrafted on the stocks, headed back to the desired point a few weeks beforehand. In proceeding with the operation insert the knife in the stock 3 or 4 in. from the top and cut off a wedge-like slice of wood in an upward direction, nearly halving the stock (if a small one) at the top, sloping the remaining portion off to the bark immediately above a wood-bud. Then make a cross downward notch at the bases of both oblique cuts, making corresponding cuts in the scion, both transverse notches in this case being made in an upward direction, to enable the latter being tongued into the stock in the process of grafting. The stock and scion should be prepared with a sharp knife, to ensure clean even cuts being made, so that the wood and bark surfaces shall fit closely and natural-like together. The scion having been fitted to the stock, it should then be bound thereto with a band of strong matting,

beginning at the bottom and finishing at the top, where the matting should be made secure. This done, cover the matting with clay (to which a little cow manure may be added) of the consistency of putty, making it firm, full in the middle, and tapering off at both ends. This will exclude air and preserve the graft in a moist state. When the scion pushes into growth the matting or ligature should be cut.

Budding.—Budding is performed as early in July or August as the bark of both stock and scion will run. Take a shoot well furnished with plump, dormant buds from the tree from which buds are to be worked, and cut off the leaves at half the length of the petioles or leaf stalks. Make a cross or transverse incision in that portion of the stock in which it is desired to insert a bud, and from the centre of this make a longitudinal one extending about $1\frac{1}{2}$ in, down the stock. remove a bud from the shoot by taking the latter in the left hand and entering the knife about \frac{1}{2} in. below the bud, more or less, according to the size of the stock and of the shoot, and with a clean sloping cut pass the knife inwards and upwards till under the bud; and then slope outwards so that the eye may be nearly in the middle of the piece or shield thus detached. In doing this the knife will necessarily cut off a thin portion of the wood along with the bud; remove this by turning the cut surface upwards, holding the piece between the forefinger and thumb of the left hand, entering the point of knife between the inner bark and upper extremity of the wood; raise this a little so that it can be laid hold of between the point of the knife and the nail of the thumb, and then, with a sort of twitch, remove the wood, taking care in doing so not to injure the base of the bud. This done, raise the bark on both sides the T-shaped cut in stock sufficiently to admit of the bud being pushed gently into the opening thus made for its reception. Let the top part of the shield be at the cross cut in stock. keeping the bud steady with the thumb of the left hand; cut off the top point of the shield so that it may fit closely to the upper edge of the transverse cut in stock. Then bind the bud in with a piece of matting or worsted, sufficiently tight to keep the base of the bud close on the alburnum (that portion of the wood next the bark), keeping the ligature free from the bud. In the course of two or three weeks it will be seen whether the buds have taken or not. If the portion of the leaf stalk drop off, it is a sign that the bud has taken; if, on the contrary, it wither or adhere, it is a sign that the bud is either dead or dving. soon as it is seen that the buds have taken, the ties should be loosened.

Gooseberries and Currants are easily increased by cuttings taken off in autumn. Cuttings of vigorous, firm-wooded shoots are the best, and if these are taken off close to the branch from which they spring, so much the better. Their points should be cut off so as to leave the cuttings about 1 ft. long; the buds on the lower half or the cutting

should be cut out to ensure single-stemmed bushes. They should be planted in rows 1 ft. apart and at 6 in. in the row with a dibble, the ground having been previously manured and dug. The second year the young trees should be planted in rows 15 in. asunder and at the same distance from plant to plant, the following year transplanting into their final positions. The leading shoots of the gooseberry and black current should only have 2 or 3 in. of the points cut off, and should be thinned out where they cross each other or are too closely together, entting the side shoots and weak upright ones back to within a bud or two of those from which they spring. Thus pruned, finer fruit is secured in both cases than could otherwise be obtained, which, moreover, in the case of the gooseberries, can be gathered without scarifying the hands in doing so, as the fruit-weighted shoots will hang gracefully over to the sides, leaving the bushes open in the middle. Red-current bushes should be pruned the same way as bush pear and apple trees—spurred back.

Diseases and Insects. - When healthy, vigorous-growing young trees are planted in fairly good, well-drained soil, in a not too low and, consequently, not too atmospherically damp a situation, in the manner indicated in this work, they will not be troubled much with disease of any kind, of which canker and American Blight are the worst-the result of the roots of the trees being in a cold, ungenial soil. Where this is the case the soil should be dug out from around and partly underneath the trees as soon as the crop is taken, and be replaced with the best "get-atable" soil on the place, roadside parings, and such like, cutting away all strong roots in the process to induce the emission of young ones. A damp situation or crowding of the branches will result in the latter being infested with moss and lichens in a few years. This should be scraped off the trunk and main branches with a piece of lath, dusting over the small branches, when damp with slaked lime. If the trees are large they should be syringed with a solution of lime and soot on a calm day, having first strained the liquid through a fine sieve. This is the most effective way of ridding the branches of all kinds of trees and bushes of this evidence of neglect.

Trees affected with brown scale, Thrip, or American Blight should be painted with a mixture of soft soap and petroleum, at the rate of four ounces of the former dissolved in a gallon of water to two wine-glassfuls of the latter, to which sufficient clay and a handful of fresh soot should be added to give it the consistency of paint, taking care in applying it not to knock off the fruit buds.

Fruit Picking.—Fruit for making into jam should, like that for eating soon after it is gathered, be quite ripe when it is picked, and should, in the case of strawberries and raspberries, be picked without the stems. But these, and fruit of every description which is intended

for sending a journey by rail, should be gathered rather under than over ripe, otherwise it will not travel well, no matter however carefully it may be packed. All fruits when ripe will come away pretty freely from the stems. The experienced eye will easily know by the colour of the fruits when apples, pears, peaches, and plnms are ready for gathering, without having recourse to the bad practice of pressing them between the fingers and thumb. However, when the flesh of a sound pear feels soft about the stem it is a pretty sure sign of its being ripe. The fruits mentioned should, in the process of picking and storing away (in the case of apples and pears), be handled as carefully as eggs, in order to prevent the fruits being bruised. Apples and pears are best spread out one deep on shelves, where sufficient of that accommodation is at hand for that purpose, as then a bad fruit can at any time be removed without disturbing the sound ones. But, on the other hand, I have known both apples and pears keep very well placed three or four deep on the shelves and stowed away in hampers in cellars, or any dry, cool place where a pretty equable temperature of from 32° to 40° can be maintained.

Preserving Fruits.—Well-made jams are very appetising and wholesome luxuries. They are patronised by all classes of society and ages. being especially welcomed on the tea table by the little folks. The fruit should be perfectly fresh and sound for preserving, and should be gathered preferably in dry weather. It is bad economy to use lowpriced moist sugar in the making of jam, as what is saved in the difference in the price of moist and good loaf sugar is lost in scum and the quality of the preserve. Fruits require more or less sugar, according to their nature, in converting them into jam. If too little be used, the fruit will not keep; if too much, the flavour is impaired, and the result is an unwholesome confection. The preserving pan should not be used for any other household purpose, and the fruit should not be allowed to remain in it one minute longer than is absolutely necessary. Except in jellies, it is never necessary to use an equal weight of sugar with the fruit. Raspberries, strawberries, currants, and gooseberries require three-quarters of a pound of sugar to every pound of fruit. fruit must be boiled first till broken. The raspberries, strawberries. and currants will not require more than half an hour's previous boiling. the gooseberries nearly an hour, before the sugar should be added, when they must boil from twenty five to thirty minutes more, stirring, and removing the scum as soon as it is formed. Previous to being used the sugar should be broken into small lumps. All preserves require constant attention. They must be stirred continually, slowly at first, and then quicker. With constant stirring no kind of jam can boil too fast. the jam stand for a day to cool before covering down. This should be done, first, by dipping tissue paper in white of egg and pressing it closely over the jam; let it dry, then dip the outer cover of writing paper also entirely in the white of egg, and press it over the sides of the pots till it perfectly adheres; this excludes the air more effectively than any other method. It should be kept in a cool, dry place, otherwise probably it would ferment, a circumstance which would necessitate re-boiling and the addition of one-third of sugar. All sugar should be dried and heated before the fire before being mixed with the fruits. Jars that have been used for other purposes, especially if the glaze be cracked by the heat of an oven, are utterly useless for preserves.

MELON.

(Cucumis melo.)

The melon is a native of the hot parts of Asia, and also of Africa. It is an annual, climbing where its tendrils meet with support, trailing where this is not the case. It is said to have been brought from Armenia to Rome by Lucullus. There are numerous good varieties of the melon in cultivation at the present time, among which the following hold a high position:—

- 1. The Earl's Favourite is a deliciously-flavoured, green-fleshed melon, of good size and thick flesh. The fruit is handsomely netted and very weighty. It was raised by the author of "My Gardener" as a cross between Hero of Lockinge, white-fleshed, and The Bouverie, green-fleshed, and was awarded a First-Class Certificate by the Fruit Committee of the Royal Horticultural Society, September 10, 1895.
- 2. Hero of Lockinge.—Fruit handsome, with white lacing evenly laid on a rich golden ground; flesh pale in colour, almost white, rich and melting in flavour. It succeeds nearly as well in an unheated pit or frame as in the melon house, and is very early, a good grower, and a free setter.
- 3. Blenheim Orange was raised by Mr. W. Crump while at Blenheim, and is the best as well as the most attractive scarlet-fleshed melon that I am acquainted with. It is a good grower, free setter, the fruits being heavily netted; the flesh is deep, refreshing, and melting, and uniformly thin-skinned.

Other good varieties are Golden Gem, Best of All, Eastnor Castle, Exquisite, and High Cross Hybrid.

Soil.—The soil the melon does best in is what is known to gardeners as a good, yellow, turfy loam, such as the top 3 in. of a pastnre field or down which has been grazed by sheep, and which has been cut and stacked the summer or autumn previous to being used. Assuming that this turf, if taken off a down, will be necessarily fibry from its being continually grazed, and also, in consequence, the soil being, as a rule, shallow, it will be necessarily rich by reason of the sheep being pastured

on it, it will, without the addition of any other ingredient, be amply sufficient, so far as the soil is concerned, for the production of first-rate melons. The turf should be chopped into small pieces about 2 in. long, but, on the other hand, if the loam or soil at command should be of a stiff, adhesive nature, old lime, rubble, or road sweepings should be added in sufficient quantity to render it porous; and if the loam or soil should be of a poor description, one-fourth of short, rotten manure (free from worms) should be added. The whole, when fairly dry, should be turned over twice before putting it in the house, pit, or frame, the same having been thoroughly cleansed, the brickwork limewashed, and the woodwork and glass washed with water. Very good melons may also be grown in a frame placed in any sunny border or position at hand, putting a couple of barrowfuls of the best obtainable soil into each light, and setting the plants therein in the manner recommended below.

Early Melons.—For the production of early melons, there is no better structure than a well-glazed, well-heated, lean-to house facing due south or south-west, and having au angle of about 30°, and a series of troughs or long boxes about 1 ft. deep and the same width, running the entire length of the house and resting on strips of inch boards laid across the front hot-water pipes at intervals of 18 in. In order to secure good drainage in the boxes, the bottoms might consist of strips of inch boards fixed longitudinally at half an inch from one another. Place thereon about 2 in. thick of crocks—the large pieces being put in the bottom, and the small ones on the top-following these with a sprinkling of half-rotten leaves or short manure, and 6 in. thick of a compost consisting of sound fibry loam and sifted lime-rubble at the rate of about four-parts of the former to one of the latter. On this form little mounds at 2 ft. apart, the apex or top of which should be nearly level with the top sides of the boxes after the plants have been set therein. They should be planted before the roots become matted, disturbing the roots and soil as little as possible, in planting, and making the soil quite firm about the roots, afterwards giving tepid water to settle the soil. The plants should be quite moist at the roots when being planted. A stick should be put to each plant for support, and be secured to the first wire of the trellis, which should be fixed to a series of screw eyesthat is, long screws with a hole in the top large enough to admit of No. 14 galvanised wire being passed through it—let into the rafters far enough to ensure stability of trellis at a distance of not less than 12 in. from the glass; 15 in. would not be too much. Should the plants evince a disposition to flag during sunshine, shade them with a few sheets of newspaper for a few days after planting. discontinuing as soon as the roots have pushed into the new soil. Damp the plants overhead, and the walls and paths generally, morning and afternoon on bright days with tepid water, as much with a view to promoting a genial atmosphere as keeping the plants free from the attacks of red spider. Ventilate freely during favourable weather to secure short-jointed consolidated growth. As the roots push through the sides of the mounds, add a couple of inches thick of the same

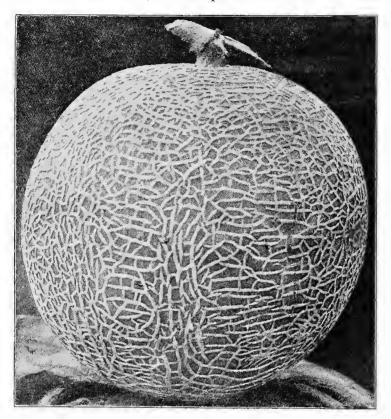


Fig. 39.

THE EARL'S FAVOURITE MELON.

mixture as that in which the plants are growing, and continue to make such additions until the intervening spaces are filled to within an inchand-a-half of the top of the box, thereby preventing the possibility of the stems of the individual plants and the soil immediately about them becoming too damp by the lodgment of water, a circumstance which would probably cause earker in the stems and collapse of plants.

Training the Plants.—Do not stop the leading shoots until they have nearly reached the top wire of the trellis, the object being to obtain an equal set of fruit and an even distribution of same over the plants. This can be accomplished by pinching out the first flowers that show on the laterals proceeding from the base of the individual plants and afterwards trained to the first set of wires. Thus treated, they will produce side

shoots from the base of each leaf stalk as freely and regularly as a wellgrown pot vine would the entire length of the stem; and in the production of which the latter will thicken considerably. Superfluous growth should, however, be pinched at one joint from the main stem. Train the shoots forming the plants at about 15 in. from one another on either side anglewise, and when they have made two or three joints of growth, stop them. When several flowers are open, fertilise in the ordinary way about mid-day when the pollen is dry. Stop the fruitbearing shoots at one joint beyond the fruit, and when it can be seen beyond doubt which fruits are going to swell, remove superfluous ones, leaving from five to seven fruits for a crop, determining the number according to strength of the individual plants, and the size which the several varieties grown attain to. All superfluous growth and flowers should be persistently pinched out, so as to prevent anything approaching crowding of shoots or useless exhaustion of the plants. The distribution of moisture in the house up to the flowering period should be attended to as indicated above, but the syringe should be withheld when the plants are in flower, and again when the fruits are approaching maturity. During both these interesting periods of growth the atmosphere should be kept rather dry and airy. Give liberal supplies of tepid diluted liquid-manure at the roots when the fruit is swelling. A night temperature of 65° to 70° should be aimed at, and 5° higher by day with fire-heat, running the temperature up to 85° with sun-heat. and plenty of air being given to ensure a sturdy growth, allowing 5° higher at closing time with solar heat, and plenty of atmospheric moisture distributed over plants, footpaths, &c.

Raising the Plants.—Place a piece of crock, cinder, or stone over the hole in the bottom of small flower-pots, from $2\frac{1}{2}$ in. to 3 in. in diameter, and over this a few leaves or a bit of moss for drainage. Then fill the necessary number of pots three-parts their depths with sifted mould of the description mentioned above, sow one seed in the centre of each, cover lightly with a little of the same kind of mould, and then plunge the pots to the rim in a hot-bed, or place in a box filled with saw-dust, and stand on hot-water pipes, covering them with a piece of glass, which should be removed as soon as the young plants appear. These, when they have made a couple of inches of growth, should be top-dressed with soil which had been placed in the frame or house two days to get warmed before heing used, care being taken not to injure the soft, sappy stems of the plants in pressing the soil slightly together in top-dressing.

Planting and subsequent Treatment of Plants, Growing Frames, and Pits.—Put a barrowful of the soil described above in the centre of each light, forming it into mounds about 10 in. deep at the highest point, which should be about the same distance from the glass. After this has been in the house, pit, or frame at least

twenty-four hours, and the plants have made three or four leaves, and before the roots have become matted in the pots, they should be turned out of the latter while quite moist at the root, and be planted one on the centre of each mound, making the soil quite firm about the roots with the hands in planting, taking care, however, not to press the stems in doing so. Then water with tepid or lukewarm water to settle the soil about the roots, and shade the plants from sunshine for a few days until the roots have pushed into the new soil, when it should be discontinued. When the plants have made fresh growth, pinch out the points of the shoots to cause them to branch, afterwards training three or four shoots from each plant over the soil in the individual lights, pinching the points also out of these when they have attained to a length of 15 in. This stopping will result in the production of fruit-bearing lateral shoots, which, when they show fruit, should be stopped at one joint beyond the young fruits; and at all times avoid crowding of the shoots and leaves as a great evil, not only in the culture of the melon, but also in that of the cucumber and all kinds of fruit trees and plants, both indoors and out-of-doors.

Earthing up the Mounds.—As the roots push through the sides of the mounds a few inches thick of mould should be added, continuing to make such additions until the intervening spaces are filled up to within an inch or two of the top of each hillock, so as to guard against the soil about the stems of the plants ever becoming too wet, thereby preventing them being attacked by canker, that is, the rotting of the stems and the speedy collapse of the plants. Make the soil quite firm, as the melon delights in a firm as well as substantial soil. The plants, however, will not require water being given at the roots often, inasmuch as they—the roots—can and will push into the moist, warm manure, underneath where they will find sustaining and congenial food, as well as moisture. The water applied to the roots, as well as that distributed over the leaves of the plants when closing the frames, &c., in the afternoon, should be about the same temperature as the soil and structure in which the plants are growing.

Putting on and Taking off Air.—The frames should have a little fresh air admitted on bright day's about nine o'clock in the morning during the month of March (always assuming that the frames are facing due south), half an hour earlier in each of the three following months, which would be half-past seven in the morning of June, closing the frame at about two o'clock in the afternoon of March, half-past two in April, three o'clock in May, and from three to four throughout the three following months during sunshine, and giving plenty of air during the heat of the day to ensure a short-jointed, consolidated growth in the plants, giving rather more air than usual when the plants are in flower, and ripening their fruits later on, with a view to securing a good "set" of fruit and putting flavour into them.

Setting the Fruits.—When the plants are in flower they should be impregnated about midday, when the pollen is dry, by picking off a small (male) flower and inserting it gently into the large open flowers, using a fresh flower for each one operated on, and serving all the large expanded flowers in the same way until five or six fruits are set pretty regularly over each plant. If the plants are vigorous, and the average weight of the individual fruits of the variety grown be 2 lb. to 3 lb., five fruits may be left on each plant for a crop, but should the average weight be above that stated, four fruits will be ample for the crop, leaving fewer, as a matter of course, on weakly-growing plants. The frames should be covered at night, when cold, with mats and dry fern, or any light litter that may be at hand, as soon as the sun has gone off them in the afternoon, uncovering them late the following morning. In the absence of frost they should be uncovered as soon as possible after daylight.

Damping the Plants Overhead.—Damp the plants overhead more or less heavily every afternoon at closing time during bright, warm weather, except when the plants are in flower, and again when ripening their fruits, when a rather dry and airy atmosphere will be congenial to their special requirements. In applying water at the roots avoid wetting the stems of the plants. When the melons are about the size of a bantam's egg, elevate them above the foliage of the plants on small inverted flower-pots, brick-bats, &c., but in every case keep the fruits off the damp soil by placing a piece of slate, tile, or board beneath them. A top-dressing of artificial manure before giving water at the roots, when the plants are swelling their fruits, will greatly tend to the production of fine large fruit. An occasional application of tepid diluted liquid-manure at the roots will also greatly assist in the same direction. Care must be exercised in the application of artificial manures to keep it off the leaves and away from the stems, and also to wash any liquidmanure deposited on the leaves off with clear water, to prevent the leaves being injured by the action of the sun while so moistened. damping over of the leaves of the plants at closing time on bright, warm afternoons during the summer and early autumn months has a twofold object, namely, that of promoting a growing atmospheric heat, and keeping the plants free from the attacks of red spider at the same time. These remarks are equally applicable to the culture of cucumber plants, as well as to all kinds of fruit trees and plants in the same stages of development. No water should be given at the roots, nor distributed over the plants growing in unheated pits and frames from the time the fruit begins to colour—the first sign of ripening—unless the cultivator aims at securing a second and third crop of fruit from the same plants, in which case sufficient water should be applied both at roots and over the foliage, to keep the plants in a clean-growing condition as long as possible.

How to secure Two or more Crops of Melons from the same Plants.—As soon as the fruits forming the first crop of fruit have attained to half their full size, sufficient flowers should be "set," in the manner described above, for a second crop. This can be easily done without in any way interfering with the size or quality of the first crop, which will be ripe by the time the second-crop fruits have become half-grown. After each successional "set" of fruit is secured, the blossoms should be all removed until the time for obtaining another "set" of fruit comes round, when the blossoms necessary to produce still another crop of fruit, distributed pretty regularly over the plants, should be selected and operated on. When each batch of ripe fruit is cut, pick over the plants, removing any damaged leaves and superfluous shoots, and then giving a surface-dressing of artificial manure, followed by a good watering with tepid water. This, as a rule, will carry the crop through.

Insect Attacks.—Should mildew attack the leaves, dust the affected ones over while damp with flowers of sulphur and ventilate more freely. weather permitting. Mildew is caused through the plants being too dry at the roots, and also through being grown in a too low and moist atmosphere, more frequently the latter. Should damp or canker attack the stems, rub a mixture of fresh soot and lime into the affected parts and place some of the mixture around the plants. A circle of the same mixture should be put round each plant a couple of inches from the stems when they are planted out. This will prevent a superabundance of damp settling on or about the stems, and will at the same time save them from the attacks of slngs. Should a free use of the syringe and clean water not be able to dislodge any black or green fly that may have effected a lodgment on the plants, recourse must be had to the use of suds or weak tobacco water, applied with the syringe after the sun is gone off the frame in the afternoon, putting air on rather earlier the following morning. But the quickest and cleanest way to eradicate the fly is to fill the frame with the fume of "XL ALL" vapouring compound in the evening, giving air the following morning as indicated.

When to Cut Melons.—The change of colour in the fruits is the first sign of approaching maturity, this being followed shortly by the cracking of the melons about the stems and the presence of that rich aroma, inseparable from all well-ripened melous. The above are pretty sure signs that the fruit is fit to cut. Hero of Lockinge may with advantage be kept a few days in a warm cupboard or some such place before being partaken of.

THE VINE.

(Vitis vinifera.)

This well-known, deciduous, hardy, climbing plant has occupied the attention of man in a more or less degree from the earliest period of the world's history up to the present time, but especially within the

last twenty or thirty years the culture as well as the knowledge of the special requirements of the grape vine have made steady progress throughout the length and breadth of the United Kingdom. The grape vine is a native of the shores of the Caspian, but is not indigenous to Europe.

According to Sickler its cultivation extended from Asia to Egypt, thence to the southern parts of Europe through Greece. From Italy it progressed northwards into France, and probably it had been introduced into Britain by the Romans. The vine is by no means difficult to grow, and under favourable conditions as regards soil and climate it lives to a great age. Pliny mentions one 600 years old. The celebrated vine at Hampton Court Palace was planted 131 years ago, and it still annually produces a large number of useful bunches. Of course, the bunches and berries are not so large as those produced by younger and more vigorous vines. Of varieties of the grape vine there are as many as twenty cultivated in some gardens (including Longford Castle), but for this work I shall confine myself to the six varieties named below:—

- 1. White Muscadine is a good grape, suitable for out-of-doors and cool green-house culture.
- 2. Black Cluster.—This is a very free bearer, very sweet, and ripeus out-of-doors.
- 3. Black Hamburg is a well-known high-class summer and autumn grape, succeeding out-of-doors in favourable districts and seasons. It is juicy, sweet, and rich, and a good grower and free bearer; the best variety for forcing.
 - 4. Foster's Seedling is a high-class, easily-managed, white grape.
- 5. Black Alicante is a large, shapely-bunched, late grape, of fine appearance and good quality, the berries being, when well-thinned, large, oval-shaped, very black, and carrying a heavy bloom.
- 6. Muscat of Alexandria is the best white and finest-flavoured grape in cultivation. When well grown the bunches and berries attain to fine size. When ripe the berries are of a rich amber colour, with a very rich Muscat flavour. It requires a warm vinery.

Raising Young Vines.—The vine is very easily propagated: the stock may be increased by layers—suckers—that is, young shoots springing from the base or roots of the established vines from seed and from eyes, the latter being the simplest as well as the most efficient method of procedure to follow. This is how vines are struck from eyes: when pruning the vines of any variety intended to propagate from, select the desired number of the finest and best-ripened shoots, label, tie together, and bury the ends a few inches in soil out-of-doors till the middle of January, or as early after that date as a hot bed is ready for striking the eyes in. Then take them up and cut the wood cleau across with a sharp knife $\frac{1}{2}$ in. on either side of the bud or eye

afterwards taking a thin slice of wood longitudinally off the side opposite the eye. Then, having previously placed a piece of crock and a few half-rotten leaves in the bottom of the necessary number of 3-in, pots for drainage, and filled them to within about 1 in. of the rim with a light sandy mould, placing a little sand on top, press one short length of the grape vine, prepared as described above, into the centre of each pot, the "barked" side being placed flat on the sanded surface, covering with mould of the same description. Then plunge the pots to the rim in a hot-bed or some other suitable place, giving tepid water to settle the soil, and cover the pots with a piece of glass. This, in confining the heat and moisture about the eyes, will greatly facilitate the emission of roots and top growth. As soon as the buds push into growth the glass should be removed, and after the young plants have made 7 or 8 in. of growth they should be shifted into 6-in. pots-that is, pots 6 in. in diameter—making the soil pretty firm about the roots in potting, returning the plants to a position near to the glass, and giving tepid water to settle the soil about the roots. After this, water should be applied sparingly until the roots have pushed into the new soil.

Soil.—The vine will flourish in a rich, sound, turfy loam, taken 4 in. deep off a chalky or limestone subsoil, and if cut and stacked (grassy side down) a few months previous to being used, all the better. This may be used either by itself or with additions of old lime-rubble, wood-ashes being made at the rate of one cartload or barrowload of each to four loads of loam and one barrowful of soot, the loam being broken up with a spade or fork, and the whole being well mixed before being used. Should the loam be considered deficient in fertility, 1 cwt. of some good artificial manure, or a cart-load of horse-droppings, should be incorporated with the above-mentioned ingredients.

Making the Border.--Unless the subsoil or substratum consists of limestone or chalk, it will be advisable to bottom the border with from 4 to 6 in. thick of chalk, pounded well together, as a means of preventing the roots of the vines from pushing into, it may be, a wet, poor, cold, uncongenial subsoil, and at the same time confining the roots in the prepared soil. The bottom of the border should be slightly sloping in the southern limits of the space devoted to the vine roots, a gutter brick being embedded in and level with the chalk surface, and covered by another upside down, and connected with a drain, as a means of carrying away superfluous water that might otherwise accumulate about the roots of the vines at an undesirable time. Put a few inches thick of old brickbats, clinkers, broken fine, on the top. or stones, with a little gravel placed on the top to fill in the chinks, and over this place turves a couple of inches thick, I ft. wide, and from 2 to 3 ft. long, grassy side down, as drainage. Narrow, shallow borders are preferable to wide, deep ones. A width of from 5 to 9 ft., and a depth of 2 ft. at the front wall of the house, and 18 in. at the

outside of the border, will be amply sufficient space for the roots of vines extending the length of rafters from 10 to 19 ft. long. The borders running parallel with the vinery or the green-house should be confined by a 41-in. or 9-in. brick wall, which will come in very handy for standing pots containing strawberry plants, for yielding a few gatherings of ripe fruit before being obtainable out-of-doors. Make the border of each vinery in sections; that is, a border 5 ft. wide should be made in two sections. 2½ ft. wide to begin with, keeping the soil in position by means of a turf wall, hurdles or boards, making up the remainder two years later. The 9-ft, wide borders should be made up in three sections at intervals of three years. Where it is not convenient or expedient to go to the expense of making a vine border as described above, I should simply recommend the digging of a hole outside the house and opposite to each rafter, representing a semicircle of 6 ft. and the same depth as indicated above, and putting in sufficient drainage to prevent the roots being submerged at any time. soil, prepared as described, should then be put into the holes thus excavated and the vines planted therein in the manner mentioned below.

Planting the Vines.—As soon as the vines have made 2 or 3 ft. of growth, and before the roots become matted in the pots, they should be planted in their permanent positions about 1 in deeper in the soil than they were in the pots, at 3 ft. apart. In planting, loosen the soil slightly round the ball of earth and roots with a pointed stick; then, having previously removed a spadeful or two of soil from the border, at the intervals indicated, drop the individual plants into the holes thus made. pressing the soil well about the roots, and afterwards watering with tepid water to settle the soil. This done, lay on a surface-dressing of short dung to the thickness of 2 or 3 in. May and June are good months for planting young vines in outside borders. If cut back, vines of the previous year's raising are used. They should be planted a few weeks before growth begins, say, in March, shaking every particle of soil off the roots, disentangling and shortening back the latter, and cutting clean away with a sharp knife any damaged portions of the fibres. spreading the roots regularly over the soil with a downward inclination southward, covering with 6 in. deep of soil and a surface-dressing of short dung to the depth of 2 or 3 in., following this with sufficient water to settle the soil about the roots.

Treatment First Year after Planting.—If the house is treated as a vinery, or vinery and stove, the vines should be syringed overhead early every morning, and afternoon at closing time on bright days, using water from a tub stood in the vinery or in a sunny situation close by out-of-doors. This will cause the vines to make a quick and clean growth, which, by admitting a free circulation of fresh air about the vines and foliage, will be sturdy, short-jointed, and well-ripened in due

time. A little air should be admitted at half-past seven o'clock in the morning, from the end of April, gradually increasing and decreasing the amount given as the temperature of the house rises and falls until closing time in the afternoon, which should range from three to four o'clock. If the house in which the vines are growing should be used as a green-house containing flowering plants, and consequently requiring a somewhat dry and airy atmosphere day and night during the summer months, the vines cannot be syringed and the house closed early, as recommended above, as doing so would be very injurious to the profusion and duration of the flowering plants. However, very decent grapes may be grown in a house of this description by the exercise of practical forethought and judgment in the matter. The vines, being healthy and active at the roots, make a more shortjointed, if less rapid, growth in a green-house, on account of the free circulation of fresh air constantly playing among the vines day and night, than they do in a vinery proper. In the absence of rain, the vines should be given liberal and frequent supplies of water at the roots as they advance in growth. Let there be no surface-waterings, on the contrary, give sufficient each time water is applied to moisten the soil about the roots. Applications of weak liquid-manure at the roots during the growing season will greatly assist and benefit the vines in swelling and colouring their bunches. Surface-dressings of artificials immediately before giving clear water at the roots will have a like effect.

Stopping the Vines.—When the vines have extended their growth a distance of 2 ft. up the rafters, pinch the points out of them, and a few days later pinch the lateral growth, starting from the top joint of each vine. This will cause the bud at the base of the leaf of the shoot pinched, and which in the ordinary way would remain dormant until the following year, to push into growth after a lapse of ten or twelve days, the buds below swelling and plumping up well during the interval. Repeat the operation after the viue (the leading shoot) has made a fresh growth of 2 ft., and so on to the middle of September, or until the leader has reached the top of the rafter, thereby securing a uniform thickness of rod and plumpness of buds the entire length of the individual caues, the side shoots being stopped at the first and second joints, and kept pinched hard at the latter point from the beginning.

Pruning the Vines.—When the vines have shed their leaves they may be pruned. If the canes are fairly strong and well ripened, prune them back to within 6 ft. from the bottom of the rafter, cutting weak rods back to within 3 or 4 ft. of that point, and the side shoots hard back to within 1 in. of the main stem. Then rub the loose bark off with the hands, and wash the canes with a stiffish brush and soft-soapy water, into which a handful of flowers of sulphur may be stirred.

Treatment the Second and subsequent Years.—When the vines push into growth, say, the end of March, select the strongest shoots at about 15 in. from one another on each side, right and left, of the main stem, placing the shoots on one side of the rod anglewise to those on the other. This will afford more room for the development of growth than would be the case were the shoots left opposite each other. All other growths pushing from the vines should be rubbed off as soon as they appear. From three to four bunches of grapes may be left on the strongest canes for a crop, and cut all the bunches off the weak ones, in order to impart vigour and strength to them for another Stop the shoots at one or two joints beyond the bunches. afterwards pinching the laterals and sub-laterals, that is, the shoots proceeding from the side and the young ones produced by them on being stopped, so as to prevent crowding of the growths and leaves. When the bunches are in flower, tap the rods with the hands once or twice between eleven o'clock in the forenoon and four o'clock in the afternoon, to disperse the pollen and thereby assist in the process of "setting" the grapes. As soon as the berries are set they should be thinned out to a space of nearly I in. from berry to berry, leaving the "crown" or central (best-placed) berries to form the bunch, being careful not to injure those left with the pointed scissors with which the thinning should be done. If there should be no flowering plants growing in the house, the temperature should range from this stage of growth until the berries begin to colour, from 60° to 65° at night and from 75° to 85° with sun heat, putting a little air on when the thermometer registers 75°, afterwards allowing the temperature to rise to 85°, with the top and bottom ventilators well open, running the temperature up to 90° at closing time with sun-heat, and plenty of water being distributed in the house over the floor and walls. On dull, overcast days no moisture should be distributed in unheated vineries, otherwise mildew would probably attack the vines. From the time the berries begin to colour the amount of air previously admitted to the house should be gradually increased, leaving a little on at night to give colour and flavour to the grapes. When the grapes are ripe, a dry, airy temperature of about 50° will suit them admirably. A moist atmosphere of the temperature just mentioned would cause the grapes to mould and rot. Late grapes (long-keeping varieties) should be cut towards the end of the year, with about a foot long of wood attached to each bunch, for inserting in bottles nearly filled with soft water and containing a few small pieces of charcoal each, placed sloping in an upward position on shelves in a dry room or shed from which frost and damp can be kept out, in which a temperature ranging between 45° and 50° can be maintained. The bottles should be re-filled with water when necessary, so that the piece of wood attached to the

individual bunches shall always be in contact with the water, to ensure the berries being preserved plump and fresh till used.

In pruning the vines the second and third year the main stems should be eut back to within from 2 to 4 ft. of the previous year's growth, according to the strength of the individual vines, entting the laterals or side shoots back to within one eye or bud of the main rod. Six to eight bunches will be a fair erop of grapes for a vine covering a rafter 10 ft. long to ripen, allowing ten to fifteen bunches to ripen on longer canes.

Fruiting Vines in Pots.—This may be easily done by anyone having a green-house and a fair knowledge of the requirements of the grape vine, as set forth in this work. The vines should be shifted out of the 3-in. pots into 6-in., and again into 10-in. (the fruiting pots), before the roots become matted. Great care should be exercised in the matter of giving water after each shift, until the roots have pushed well into the new soil, when the supply should be gradually increased, giving surface-dressings of plant manure two or three times a week immediately before giving water. Treat the vines in the matter of stopping, &c. the same as described above. The following spring the eanes can be trained up the rafters (one underneath each), or twisted round half-a-dozen sticks stuck round the edge of the individual pots, in the manner shown in Fig. 40. However, it is much better to obtain pot vines, properly grown for this purpose, from some well-known grower of vines.

Insect Attacks .- Of these, mildew (oidium Tuckeri) is the most common, as well as the most troublesome, in cool vineries. Dryness at the roots will produce mildew on the leaves of trees and plants susceptible to its attacks in dry, hot summers, out-of-doors as well as under glass, but the appearance of mildew on the young growths of fruit trees and plants is generally eansed by a low and too moist atmosphere, that is, by a spell of cold, dull, showery weather during the growing season. The only remedy for vines or other plants attacked by this parasite or fungus out of doors and in cool houses is to dust the affected leaves while damp with flowers of sulphur, and, weather permitting, to ventilate freely and endeavour to keep the atmosphere of the house quite dry and airy until the grey powdery spots on the leaves and berries have turned brown. Where houses are heated by hotwater pipes the getting rid of the mildew pest is a very simple and easy matter: a few handfuls of flowers of sulphur, stirred into a vessel containing limewash and applied to the heated pipes with a brush shortly before dark; the house being dry and closed at the time, will quickly become filled with the sulphury fumes. The fire should be kept going hard for a couple of hours, so as to run the temperature up to 82°, but not higher; the fires should then be slackened and a little

air put on, heating the pipes and closing the house two or three evenings in succession and ventilating rather freely the following days, weather permitting, will do for the mildew.

Red Spider (acarus telarius) is caused by a high and too dry atmospheric temperature being observed, or by the soil being too dry at the roots of the plants and trees affected, or all three together. The

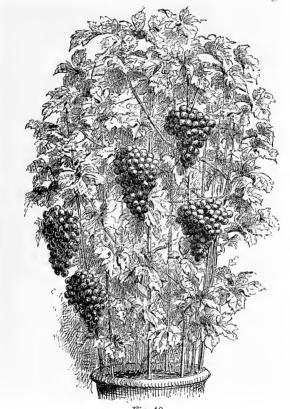


Fig. 40.
A SPECIMEN FRUITING POT VINE.

remedy is to give sufficient water at the roots to moisten the soil, and the syringing of the leaves with tepid water, or the sponging of the affected leaves with soapy water; the most radical remedy being the sulphuring of the pipes as recommended for mildew. Thrip (t. minutissima) also attack vines growing in houses heated by hot-water pipes and flues. It results from the same cause or causes answerable for the presence of red spider, and may be got rid of by fumigating the house two or three evenings in succession with "XL ALL," when the house and vines are dry, giving air rather freely the following days;

but red spider and thrip seldom attack vines growing in cool houses or out-of-doors if kept properly supplied with water at the roots.

Mealy Bug (cocus adonidum).—Once this very undesirable and objectionable-looking creature effects a lodgment on vines or other plants, it is very difficult to dislodge. The most effectual and simple remedy known is to thoroughly smear the affected vines with a mixture of coal-tar and clay, using one part of the former to nine parts of the latter. The clay should be dried and powdered, so that it may be passed through a \(\frac{1}{4}\text{-in.}\) sieve; then measure the pulverised clay into a large flower-pot (having a lump of stiffish clay put into the hole in the bottom), using a 3-in. flower-pot as a measure, and putting the measure of tar into the vessel after the specified quantity of clay has been deposited therein. Then work the mixture well together, afterwards adding sufficient boiling water to give it the consistency of ordinary paint; apply the mixture with a paint brush to every crevice about the spurs and every portion of the affected vines, keeping the mixture well stirred meanwhile.

The Vine Louse (phylloxera vastatrix) is the most virulent as well as the most formidable disease to which the vine is heir. This I know by having, in 1879-80, had considerable practical experience of the pest in five out of seven vineries at Longford Castle, and, as the result of several carefully-made experiments with a view to destroying the insect without at the same time injuring the vines, I arrived at the conclusion that any fluid which is strong enough to kill the insect in its rapid passage through the soil will also kill the vines. I am also convinced that where vine borders can be submerged for four or five days at the end of July, and again a fortnight later, when the phylloxera is in full activity; the pest will thereby be exterminated, but unless the borders can be thus flooded for the time indicated, it is much better to adopt the "stamping-out" process; that is, as soon as the grapes are cut, to root out the vines, remove the soil down to the drainage, scrub and wash the brickwork two or three times with hot lime, thoroughly wash the glass and woodwork, and then paint the latter, afterwards strewing 1 in. thick of coarse salt over the drainage so as to reach any affected roots concealed therein. The following year make a fresh border and plant fresh vines in the manner described above.

Wasps and flies are troublesome when the grapes are ripe. These may be caught in narrow-necked bottles or glasses especially made for the purpose, nearly filled with sweetened beer or treacle, and suspended among the vines. A good, old-fashioned, most effective, and simple means of saving all kinds of fruit, from the grape to the gooseberry, from the ravages of wasps and flies is to place one or more pairs of ordinary hand-glasses close to the positions to be protected on three bricks, with some damaged fruit underneath as a bait. Make a small

hole in the top of cover, then place another hand-glass (frame and top) over the first, letting it rest on a little moss to ensure its fitting well on to the lower one. The insects, being attracted by the ripe, damaged fruit placed therein, enter through the opening by the bricks, and in due time pass through the hole in the top of the inner glass into the outer one, in which, being air-tight, they perish.

Training Vines on Open Walls.—It is within the reach of every cottager and artisan living in the country in the southern and western parts of Great Britain and Ireland to sit under the "shade of their own grape vine and fig tree." Of course the trees should be planted against a wall facing either due south or south-west. If the available space of wall to be covered with the grape vine be, say, 12 ft. wide (it does not matter about the height), plant the vine in the centre of holes, prepared as recommended for vines under glass and in the manner there described, securing the vine to the wall by means of nails and shreds. After the vines have pushed well into growth, train the two lower young shoots of each vine right and left to the wall, at from 18 to 24 in. from the ground, pinching the points out of the leading (upright) stems to throw strength into the shoots being trained right and left in a horizontal position. Stop these at 3 ft., in the manner described under the heading of "TREATMENT FIRST YEAR AFTER PLANTING," training the young shoots resulting from these stoppings in an upright direction at 5 ft. from the main stem, again stopping the young leaders at 3 ft., and pinching all lateral growths or side shoots hard back to one joint from the point whence they start. pruning time shorten back the two main canes to within I ft. of the

vertical and horizontal curve—that point from which the shoots are trained in an upright position—cutting the wood spurs as well as the original central shoot close back to the prominent buds at their bases. When the vines push into growth, towards the end of March or early in April, train four intermediate shoots in an upright position at 2 ft. apart, afterwards stopping them as previously advised, and training side shoots or spurs at 15 in. apart on the main rods (see Fig. 41), cropping lightly

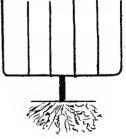


Fig. 41.

rather than the reverse in all cases. The cultural remarks as regards thinning the bunches, thinning and stopping of the shoots, giving water at the roots, and dealing with insect attacks, being the same as recommended for vines under glass, they need not be detailed here.

THE CULTURE OF FLOWERS.

THE culture of flowers for the embellishment of our respective homes being the most ornamental and enjoyable part of gardening, I have therefore left the remarks on this subject to complete "MY GARDENER" I shall only treat of a select list of popular and easily-managed The cottage-garden-show societies generally existing in England have done and still continue to do much every year, not only in creating a love of flowers among the artisan and labouring classes, but also in promoting a better, if not a first, knowledge of the culture, their natural habits and requirements, and the conditions and treatment which lead to the most satisfactory results being secured; and it is highly gratifying to those taking a real interest in this humanising and civilising work to see and hear of fresh societies of the kind indicated springing up every year, the good example set by the nobility being followed by the squire and others, and so the good work is carried on. Experience tells me that a fairly correct idea of the habits of the people and the internal condition of their respective homes may be arrived at by taking a survey of the condition and general appearance of the external surroundings of each house in passing from one village to another. I merely mention this to show that people who take an interest in Nature's handiwork -- in the production and care of fruits, flowers, and vegetables-cannot well do so without being imbued with better ideas—ideas which give birth to a better and more profitable train of thought-and also to point out that any society which not only promotes a love for flowers, &c., but also a better knowledge of their culture among the people of this country, is therefore deserving of the praise and support of all classes of the community.

HARDY HERBACEOUS PLANTS.

(Of the nature of herbs: not woody.)

THERE are many kinds and varieties of herbaceous perennial plants in cultivation in this country; good collections yielding a fairly good display of a variety of flowers at least nine months out of the twelve. The family of hardy bulbs in themselves give a fine succession of flowers of pleasing and various shades of colour, amongst which may be mentioned the snowdrop (galanthus nivalis), scilla, crocus, hyacinth,

tulip, white and other lilies, sparaxis, ixia, anemone, ranunculus, daffodil, narcissus, chionodoxa luciliæ (glory of the snow), gladiolus, erown imperials, sehizostylis eoceinea, erythronium, eolehieum, irises and tigridias. Besides the above we have numerous kinds and varieties of fibrous-rooted and tuberous-rooted perennial plants, to give variety and succession to the display produced by the bulbous plants mentioned above. We have the violet, hepatica (liverwort), sedum (stone erop), saxifraga (saxifrage), arabis (bastard tower mustard or wall eress), albida and A. albida variegatum, aubrietia (treacle mustard), deltoides and A. grandiflora, dielytras (Dutchman's breeches), helebores (Christmas rose), gentianas (fellwort), geum (kidneywort), gaillardias, mimuli (monkey flower), antirrhinum, funkia, francoa, phloxes, dianthi (pink or earnation), hesperis matronalis, alba plena (double white rocket), acouites, lythrums (everlasting pea), aquilegia (columbine), eampanula (Canterbury bell), spiræas (meadow sweet), solidago (golden rod), silenes (viscous campion or eatchfly), armeria maritima (sea pink or thrift), veronicas (speedwell), pansy, pæonia, eheiranthus (wallflower), ehelone (pentstemon), pyrethrum, valeriana (valerian), aster (starwort), bellis (daisy), digitalis (foxglove), polygonatum (Solomon's seal), polianthes (tuberose), musk, primula (primrose), myosotis (forget-me-not), lupinus (lupine), lychuis (campion), hemerocalis (day lily), delphinium (larkspur), althæa (hollyhock), physalis (winter cherry), and monarda didyma (Oswega tea or bergamotte), convallaria (lily of the valley), doronicum (leopard's bane), and eineraria maritima. There are many varieties of the several kinds of hardy perennial bulbous plants enumerated above, varying in height, habit of growth, colour, and shape of flowers. The bulbs are increased by bulblets, which form at the bases and sides of the old bulbs, and in the course of two or three years develop into flowering bulbs if left undisturbed in the ground. Herbaceous (fibrous-rooted) plants are propagated by division of the roots in early spring. Just as the plants are starting into growth is the best time to take off and plant the divisions. Most herbaceous plants will do well in any kind of fairly good soil inclining to be light rather than heavy, and away from the shade of treesthat is, fully exposed to the beneficial influence of the sun all the day long-but when given a light, sandy loam, enriched with well-rotted manure, deeply dug into it at first, and afterwards a light annual dressing slightly forked into the ground, results of the most satisfactory description in size, form, texture, and colour of flowers may be looked for.

Arrangement as to Colour.—In planting beds and borders with herbaceous plants, or any other kind of plants for that matter, due regard must be paid to the colour of the respective kinds and varieties of plants flowering at the same time, so that they accord one with

the other, as two or more tints of the same or approaching colour when placed side by side militate against one another, to the disadvantage of both and the general effect produced. The necessary alterations to be made in the arranging of the plants, as to colour, the following spring should be noted down when the plants are in flower, the want of accord or harmony in the different shades of colour and heights of the several plants being then apparent.

Staking Plants.—It may appear unnecessary advice on my part to say that sticks should not be put to plants unless support is absolutely necessary. But be this as it may, I may say that I have seen the appearance of plants marred by needless staking. Plants requiring support should have the stakes placed at the side furthest from the walk, and consequently most out of sight, tying the plants thereto in as natural-like manner as possible, giving the desired support without altering the natural habit or appearance of the plants by the presence of stakes and ties, which are frequently used in such a way as to give the plants operated on a "besom-like" appearance. Another point to be observed in the tying up of all plants is the allowing of sufficient room in the ties for the due development of the individual shoots; otherwise, the shoots of fast and vigorous-growing plants, such as dahlias, hollyhocks, &c., will be greatly injured by the ties cutting into them.

Below we give a selection of hardy border plants, together with a few particulars of each kind and variety mentioned:—

Achillea eupatorium.—Three to 4 ft. high, strong growing, producing bright yellow flowers from July to September; very suitable for shrubberies. (Caucasus, 1803.)

A. aurea.—Of dwarf, compact habit, about 12 in. high, of a bright yellow, a free bloomer; flowers in June. (Levant, 1739.)

A. rosea.—Of slender habit, 2 ft. high, flowers rosy crimson; it blooms in June and again in August. (Southern Europe.)

Aconitum (monkshood.)—There are many varieties resembling each other very much in their general appearance, but yet distinct. The flowers are hooded, produced on dense erect stems; the roots of all are very poisonous; propagated by division.

A. cammarum has deep-purple flowers, produced in August, attaining to a height of from 3 to 4 ft. (Austria, 1752.)

A. Japonicum grows to the height of about 2 ft., producing blue or white flowers, and of branching growth. (Japan, 1790.)

A. versicolor produces white, blue margined flowers in branching erect racemes. This is a pretty species, height 3 ft. (Siberia, 1820.)

Adonis vernalis is an early, spring-flowering plant, with finely divided leaves and large yellow flowers; height about 12 in.; propagated by seeds or divisions. (Europe, 1829.)

Alyssum saxatile.—This is a compact-growing and very free-blooming plant of about 12 in. high, producing sheets of golden blossom in April and May. It is easily increased by seeds, which may be sown out of-doors as soon as ripe. Old plants should be replaced by young ones at least once every third year. (Candia, 1710.)

Anemone (wind flower).—This contains a variety of lovely border plants, besides our own familiar garden anemone. They succeed in any average soil, and are easily increased by seed and root-buds.



ANEMONE APPENNINA.

A. appennina (blue wood anemone).—Supposed to be a native of England; flowers freely in April; about 6 in. high; succeeds well and shows to great advantage when planted in grass at the base of trees.

A. coronaria is the type of our common garden anemone; it produces flowers of almost every shade of colour in March and April. It grows freely from seed and prefers a light soil. (Levant, 1596.)

A. hortensis produces intense scarlet star-shaped flowers, 9 in. high, during the month of May. It grows in tufts. (Italy, 1597.)

A. japonica.—This flowers in July and August; flowers semi-double and of a deep rose colour; grows from 2 to 3 ft. high; may be readily increased by root-buds. (Japan, 1844.)

A (jap.) Honorine Jobert is a sport from the preceding variety, and should be grown by everybody possessing a few square yards of flower garden. The large white flowers, set off with a profusion of yellow stamens and handsome green leaves, are borne on stems about 3 ft. high in September and October. It is the finest autumn-flowering plant in cultivation, and in many places it is grown extensively in pots for market as a decorative plant as well as for private use.

Anthericum liliastrum (St. Bruno's lily).—This liliaceous plant has narrow, grass-like leaves, and produces with great freedom spikes of pure white scented flowers about 15 in. high in May. It likes a moist peaty subsoil, and may be increased by division of the roots. It is now generally known under the name of czackia. (Southern Europe, 1629.)

Arabis.—The wall cresses contain, in addition to a number of purely Alpine species, two, named below, well suited for borders, and especially for spring gardening. They are both dwarf trailers, and very early spring bloomers. They are in no way particular as to soil or situation, and may be increased quickly and with the greatest of ease; all that is required is to pull the tufts of rosette-like plants to pieces and prick out for an edging in rows, about 6 in from plant to plant in the row, or in irregular patches of five or seven plants in a patch, in borders, making the soil firm about them in planting, and then giving water to settle the soil.

A. albida has leaves of a whitish tinge, pure white flowers, grows together into a compact mass about 6 in. high. The patches should be trimmed and thinned out a little after flowering is over. (Caucasus, 1798.)

A. crispata.—The leaves of this are of a light green, and narrower, and the flowers are later than those of the preceding one, to which it is inferior. The variegated form of this is much cultivated for its prettily-marked foliage. (Carniolia, 1818.)

Armeria cephalotes is the largest form of our sea-pink. It produces tufts of broad leaves and masses of round flowers freely on the rocks in the neighbourhood of Ilfracombe, Lynton, and other places in North Devon, and on Whitherry Point, a kind of promontory jutting into the German Ocean, Tyuninghame, the Earl of Haddington's beautiful place in East Lothian. The sea-pink, or thrift, is cultivated extensively in the public gardens in Bouruemouth. The flowers (pink) are

supported by stems 15 in. to 18 in. long. It flowers in June and July. (Portugal, 1800.)

Arundo conspicua is a very ornamental grass of large dimensions, and resembling in growth the pampas grass (gynerium argentum), but is more eompact and graceful in aspect, and comes into flower earlier—from July to September. It is a native of New Zealand, is a good grower, and the massive tufts of long, narrow, arching, grass-like leaves, above which cane-like stems, 8 to 10 ft. high, supporting long silvery plumes, renders it a very striking and desirable plant for planting on lawns, river banks, and such-like places.

Asclepias tuberosa sends up stems 15 in. to 18 in. high, with long blunt-pointed leaves, supporting a flat corymb of bright deep yellow and orange flowers; it has a fleshy, brittle root, and, therefore, should not be disturbed only when absolutely necessary. It is a bandsome plant, flowering in September, and is partial to peat soil. (North America, 1680.)

Asphodeius is a genus of handsome liliaceous plants, having thick and fleshy roots and erect stems, bearing star-like flowers. They succeed in any fairly good garden soil, and are propagated by seeds and divisions.

A. œstivus.—The stems of this handsome border plant attain to a height of 3 ft., the leaves are long and tapering, the flowers being white, striped with brown, and are produced in June and July. (Spain, 1820.)

A. albus (white asphodel) is a vigorous-growing and showy plant, having stems 3 ft. high, long, deeply-channelled, tapering leaves, and white flowers, which appear in June. (Southern Europe.)

Aster.—This is an extensive genus of composite plants, commonly called Michaelmas daisies, yielding starry flowers late in the autumn. They all propagate freely by division, or by means of cuttings of the young shoots, taken off in spring, inserted in sandy soil, and watered.

A. bessarabicus is a compact grower, about 15 in. high, with broadish leaves, gradually narrowing up the stems, which are crowned with large bright blue flowers in September and October. (South Russia, 1834.)

A. longifolius formosus is an abundant bloomer, producing levely bright rose-tinted lilac flowers, borne on stems 18 in. to 24 in. high, in September. (North America, 1798.)

A. novæ Angliæ grows from 4 to 5 ft. high, producing long, narrow, downy leaves, and compact masses of deep purple, starshaped flowers in October. (North America, 1710.) Both this and its variety *spurius*, having red flowers, are fine border plants for a back row, or shrubbery culture, the latter attaining to a height of from 6 to 7 ft.

Aubrietia is a very free spring-flowering trailing plant. Planted in irregular patches in the herbaceous border, in small beds as an edging, in vases or decayed trunks of trees hanging over the edges, it is very effective. It prefers a light, dry, sandy soil. The following are the two best varieties to grow:—

· A. deltoides forms a carpet of bright blue flowers in April. (Levant, 1710.)

A. grandiflora is less compact in growth, and yields larger flowers of a lighter shade of blue. (Greece, 1847.)

Campanula.—This produces bell-shaped flowers of various shades of colour throughout the summer months. There are dwarf, intermediate. and tall-growing varieties. Amongst the dwarf growers, C. turbinata. C. alba. C. carpatica. C. tenella, with bronzy leaves, and somewhat allied to our common harebell, but having a darker colour in the flowers and broader leaves; C. soldanellæflora is a beautiful plant, with narrow leaves and slender stems, every flower being double, having a duplicately-fringed margin. Amongst the intermediate types we have in C. glomerata, with dense heads of rich, dark-blue flowers; C. nobilis, producing large well-defined bell-flowers, sometimes white, sometimes slightly chocolate-tinted; and C. persicifolia, with its white and double varieties, the best and most desirable forms. The following are the best of the tall-growing species: C. macrantha, a large-flowered Russian form of our native C. latifolia, growing to a height of 5 ft.. and erect in habit; C. pyramidalis is as suitable for pot culture for embellishing conservatory, greenhouse, or room as it is for ornamenting beds and borders out-of-doors, with its tall spikes closely studded with beautiful blue flowers for a height of 5 or 6 ft.; it retains its beauty for a considerable time; and C. lactiflora, a compact-growing, herbaceous plant, with, as the name implies, milk-white flowers.

Cheiranthus alpinus.—To this genus belongs the deservedly-popular wall-flower. The Alpine variety grows well as a border plant in light soils, forming dense masses of its lovely lemon-yellow flowers in April and May. (A native of South Europe; introduced in 1810.)

C. marshallii and cloth of gold are two excellent yellow-flowering varieties, and harbinger (blood-red) is the best dark. In order to retain the several varieties true it is necessary to propagate by cuttings slipped off the old plants in spring, putting them in sandy soil in rows 6 in apart and at about the same distance from plant to plant in the rows, pressing the soil about them with the dibble, and giving water to settle the soil. Plants may also be raised from seed sown the end of April in the same description of soil recommended for cuttings, and in a warm situation, sowing the seed thinly in drills about $\frac{1}{2}$ in deep and 6 in, asunder, afterwards closing the soil over the drills and

pressing the whole firmly together, either with a board or the back of a spade or shovel, watering through a fine rose. The seedlings should be pricked out in a bed as recommended for cuttings, or be transplanted where they are intended to flower before they become crowded. If the former, a sprinkling of short manure should be laid on a hard surface, followed by 2 or 3 in. deep of rich soil, into which the young plants should be pricked as indicated, making the soil firm and watering as advised for cuttings. Thus treated the plants will make a sturdy growth, and lift with nice balls of mould and manure adhering to their roots, and experience little, if any, check in being transplanted.

Convallaria are dwarf-growing, endogenous plants, represented by the well-known and deservedly popular lily of the valley. They delight in a rich, light, sandy soil, made firm in planting, and are easily propagated by division; so easily, indeed, that it is difficult to eradicate the plant once it gets established.

C. majalis (lily of valley).— This favourite plant is so well



Fig.~43. CONVALLARIA POLYGONATUM.

known under its trivial name as to require but brief reference being made to it. Its sprays of pretty white sweet scented bells are produced well above its large, handsome, dark green leaves in May and June; and it will succeed under almost any circumstances of soil or situation. There is a larger variety known as the major form, and one with rose-tinted flowers, as well as a pretty one with golden-striped leaves, which when fully grown is very ornamental. (A native of Britain.)

Coreopsis auriculata is a useful herbaceous composite plant with smooth, almost entire leaves, bright yellow flowers, those of the ray deeply notched; height 2 to 3 ft.; flowers in July and August. (North America, 1699.)

Dianthus.—This is generally known as the genus to which the pink, carnation, picotee, and sweet william belong. In addition to these it yields many lovely border plants—so many, indeed, that it is difficult to make a selection.

D. deltoides.—This dwarf, compact, free-flowering plant may be found on most of the Scotch mountains, but it is amenable to ordinary culture. It has grassy-green foliage and small, intensely crimson flowers, the deficiency in size being amply compensated by brilliancy in colour.

- D. petræus (rock pink).—This resembles the previous variety in compactness of growth, but the flowers are larger and of a deep rose colour. As the seedlings vary in colour, with a strong tendency to depreciation, it is advisable to propagate the plant by cuttings in the ordinary way.
- D. superbus.—This pretty plant attains to a height of 18 in.; the rosy white petals are divided into slender segments. It is beautifully scented, especially so towards night. (Southern Europe; introduced some three centuries ago.)

Dictamnus fraxinella is a good, old-fashioned border plant, forming a compact underground root stock from which it sends down thick, strong roots. Leaves resemble those of the ash; hence its specific name. Purplish or white flowers are borne on stems about 2 ft. high. The whole plant is studded with glands, which give off a peculiar and powerful aromatic smell. It dislikes being disturbed. May be increased by seeds, but plants thus raised will be four or five years before they flower; the seeds should be sown as gathered. (Germany, 1596.)

Dielytra spectabilis is a border plant of great value; it is also extensively grown in pots for early forcing, its pale green, elegantly-cut foliage surmounted by gracefully-drooping spikes of heart-shaped pink flowers being very telling. It is a native of China and Chinese Tartary. Originally introduced in 1810, but apparently lost to the country, and re-introduced in 1845 by Fortune. It is increased by division, and should be grown in a sheltered situation having a south or west aspect, giving it a light, rich soil.

Doronicum caucasicum.—This plant produces heads of bright golden flowers, borne on stems 18 in. high, in March and April, when other flowers are scarce, showing off to advantage above the large heart-shaped leaves. It grows freely in any soil. (Caucasus, 1815.)

Francoa is a South American genus from a considerable altitude on the Andes. It is perfectly hardy in most places. All the species are attractive border plants and grow freely in a light, rich soil.

- **F.** ramosa (maiden's wreath).—Of dense, compact habit; leaves somewhat hairy; flowers white, produced in spikes 18 in. to 24 in. high, from July to September. This makes a very effective decorative plant grown in $4\frac{1}{2}$ -in. and 6-in. pots for intermixing with groups of plants, the spikes of white arching flowers showing off to great advantage above a groundwork of maiden hair fern (Adiantum connectum), and among bright and other foliaged plants. (1831.)
- **F. sonchifolia** is less compact and stronger growing, and the leaves less lyrate than in the preceding variety. Flowers a rosy purple, in branching spikes 2 to 3 ft. high. (1830.)

Funkia.—A group of plants with haudsome, broadly-ovate, undivided, channelled leaves. They are tufty, growing plants, requiring a strong rich soil for their full development.

- F. albo-marginata.—The leaves of this variety have a marginal stripe of yellowish white, the flowers (lilac) being produced in racemes 15 in. high in July. (Japan, 1837.)
- F. grandiflora has large, shiny, light green, sub-cordate (half heart-shaped) leaves, above which the racemes of pure white, sweet-scented flowers are borne in September on stems 18 in. high. (Japan, 1790.) It is quite hardy and makes a capital pot plant for greenhouse, conservatory, room, or window decoration.

Gaillardia.—This is a genus of attractive plants, all being natives of North America. It is easily increased by seed, which ripens freely. They are good growers and free flowerers, doing well in any fairly good soil and open situation.

- G. aristata.—The flower heads of a buff orange colour, produced in July and August, are 3 or 4 in. in diameter; height 18 to 24 in., according as the soil is poor or rich. (1812.)
- G. bæselari.—The flower heads of orange colour, having a red blotch at the base of the florets, are borne on stems 18 in. high. (Possibly a hybrid of American origin.)

Gentians.—This genus includes a number of deservedly popular varieties, all so useful and suitable for border culture that it is difficult to make a selection. Planted among stones in a light soil and a rather dry situation, where the plants are not likely to be disturbed at the roots, they will grow and flower most freely, increasing in beauty every year.

G. acaulis.—The old dwarf gentianella, so long known in our gardens, and admired for its large blue tubular flowers. It is a very popular spring flower, and a native of Britain. Propagated by division of the roots.

Geum chilense atrosangueneum.—The flower stems of this rosaceous plant rise from a mass of unequally divided pinuate or feathery leaves to a height of 18 in., and produce flowers of a deep blood-red in June and July. The double or semi-double form is very desirable. (Chile, 1826.)

Helleborus.—In this genus are included about twenty species, amongst which is the well-known Christmas rose (H. niger), to which we shall confine our remarks. The blackness indicated by the specific name must appear a sad misnomer to anyone contemplating the pure whiteness of the interior of the flower; it refers, however, to the poisonous property contained in the root. A further anomaly exists in calling it a Christmas rose. Although the flowers are pure white inside, they are suffused with a delicate rose colour outside. The Scotch variety, known by the name of "maxima," is superior to the old species; the flowers, in addition to being treble the size, are well

elevated on long, stout foot-stalks. They bloom in January, February, and March, according to circumstances—the severity or openness of the winter. (Austria, 1596.)

If the plants are given a light, rich soil in a border or piece of ground having an east or west aspect, setting them in rows 1 ft. apart and at the same distance in the rows, making the soil firm about them in planting, and afterwards attending to them during the summer menths, in the way of giving water at the roots and keeping them free from weeds, they will make satisfactory growth; and when the foliage has died down naturally, a little wood ashes or a mixture of lime and soot may be put round the crowns of the individual plants, and then a portion, if not all, may be covered with an ordinary garden frame and lights, if at hand, or whatever substitute may be most easily improvised, covering with shutters and fern in order to forward the opening of the flowers by a given time. Meanwhile the attacks of insects must be guarded against in the manner indicated. Sometimes mice are troublesome in gnawing the flowers thus produced. They should be trapped.

Hemerocallis (day lily).—This popular old garden flower is represented by H. graminea, with bright yellow, H. disticha, with deep orange flowers—the former a native of Siberia, the latter of China, neither growing more than 15 in. high—H. flava from Siberia, and H. fulva from the Levant, the former, as the specific name implies, yellow, the latter a sort of buff orange colour, both varieties growing to a height of 3 ft. They grow freely in any ordinary garden soil.



Hepatica.—This genus of bright early spring-flowering plants is of compact, tufty habit of growth, the flowers rising well above the dense masses of three-lobed leaves. All the varieties, while succeeding best in a rather strong, loamy soil, will grow and flower freely in ordinary garden soil. They increase readily by division.

H. triloba (syn. Anemone Hepatica) is a native of Europe, varying much in colour; some are pink (single and double forms), others blue (single and double) and white.

H. angulosa is a strong grower, 6 to 8 in. high, producing beautiful large blue flowers, much larger and more showy than in H. triloba. (Hungary, 1864.)

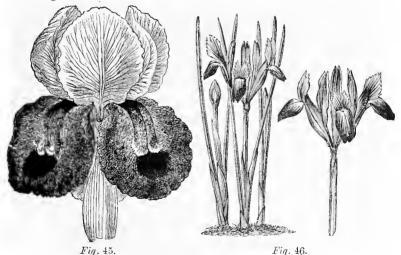
Hesperis matronalis flore-pleno.—The old double rocket is not so generally grown as it undoubtedly deserves to be. It produces branching spikes of white fragrant flowers, suffused with the slightest tinge of pink, during the months of May and June. Increased by cuttings and divisions, and will grow in any garden soil. (Europe, 1597.)

Iberis (candytuft).—In its perennial form this plant gives us several dwarf, compact-growing species that are all deserving of cultivation. They are easily increased by cuttings put in either in spring or autumn.

I. carnosa (syn. I. correæfolia).—A compact plant, having somewhat broad, fleshy leaves and dense heads of bloom of great purity. (Spain, 1824.)

I. saxatilis is the variety most frequently met with in cultivation. The leaves are long and narrow, and the corymbs of long white flowers are produced in such profusion in the month of May as to present the appearance of masses of snow. (South Europe, 1739.)

Iris.—In addition to the old fleur-de-lis, or flag-flower, of different forms, met with in cottage gardens, we have, in what is popularly known as the Spanish iris, many charming varieties, the flowers being large, curious and interesting in shape, and rich and varied in colour. The following are a few of the best varieties:—I. germanica, with large



IRIS IBERICA.

IRIS RETICULATA.

blue flowers; I. susiana, with brown mottled flowers, from the Levant; I. flavescens, having beautiful straw-yellow flowers; I. variegata, bright yellow flowers, with the reflexed portion of the perianth a rich, deep velvety chocolate; I. amæna, iu which the white and blue are beautifully blended; I. nudicaulis produces its blue flowers three weeks or a month

before any of the above mentioned varieties come into flower; and I. pumula, whose flowers rise only a few inches above the ground and present many beautiful shades of colour. The iris and its numerons varieties are among the easiest of flowers to cultivate; they will grow almost anywhere and in any kind of soil, but preferably in a light, rich, open one.

Lathyrus (everlasting pea).—This old-fashioned very free-growing plant is so well known that little need be said about it here, further than mentioning that the roots are very tough and deep-feeding, and, therefore, do not like being disturbed, and on that account (excepting L. grandiflorus) are more readily propagated by seeds.

L. grandiflorus (large-flowered everlasting pea) is of slender habit of growth, spreads quickly underground, is difficult to establish and equally difficult to eradicate. Its flowers are produced singly or in pairs, of a dark purplish-crimson colour, in May and June. It grows from 2 to 3 ft. high. (South Europe, 1814.)

L latifolius.—This variety attains to a height of 5 or 6 ft., and, being of branching habit, requires some support. The flowers, produced in compact spikes, are deep rose-coloured. There is a white variety very useful to cut from and intermix with other flowers. Both flower in September, and are all the more valuable on that account, but they are without perfume. (A native of Britain, but much improved by garden cultivation.)

Monarda didyma.—An erect growing plant, producing scarlet flowers on stems 2 to 3 ft. high, in August and September. (North America, 1752.)

Myosotis is a popular genus of hardy borage worts, well known under the familiar name of forget-me-nots, and of great value for planting in any place where the sun can reach it, from the front garden to sunny banks or spare out-of-the-way nooks, where, during the last week or two of April and throughout the month of May, masses of the softest blue imaginable will gladden the hearts and command the admiration of all who see them. M. dissitiflora is the best variety. It propagates itself from self sown seeds in abundance annually.

M. purpurea is an equally free-blooming species; flowers dark purple; height 2 ft.; August and September. (North America, 1856.)

Enothera (evening primrose).—This genus gives us several varieties of valuable hardy border plants, but the fact of their flowers not opening until the approach of evening militates against its being used for bedding purposes.

C. eximia (syn. **C.** marginata).—This has long, narrow-notched, and hairy leaves and wide-spreading underground stems; flowers continuous through June, July, and August. They are large, white, and scented like those of **Magnolia grandiflora**. (Kansas, 1864.)

- **C.** serotina.—From a dense tufty crown flowering stems are sent up to a height of 2 ft., surmounted by clusters of bright yellow flowers in July. It is a surface-rooter, and, therefore, liable to suffer from drought. (North America, 1820).
- **Œ.** taraxacifolia.—Stems trailing and producing large white flowers freely and continuouly during the summer months. Easily increased by seeds. (Peru, 1825.)

Omphalodes verna is a delightful spring flowering plant, producing a profusion of forget-me-not-like flowers, but twice the size; height 6 in. to 9 iu. It loves the shade and protection of trees. (Southern Europe, 1633.)

Ourisia coccinea is a very handsome species of scrophulariaceæ, with a short creeping stem with an erect scape (flower spike) a foot or more in height, bearing a raceme of drooping crimson flowers set on in opposite pairs. (Chilian Andes, 1860.)

Pentstemon.—A genus of plants partaking of a slightly shrubby habit, with smooth willow-like leaves, and producing handsome tubular flowers. Apart from the popular hybrid varieties, we would select the following, all of which may be readily increased by seeds and cuttings. They pay well for good soil and generous treatment.

- P. digitalis.—Leaves broad, smooth; flowers white; produced in August; floral stems 2 ft. high. (North America, 1824.)
- P. humilis.—This is a compact-growing species, producing numerous sbort stems 6 in. to 9 in. high, bearing a profusion of bright blue tubular flowers, with pale throat, in June. (Rocky Mountains, 1870.)

Phlox.—The hybrid varieties of this genus are legion, and many of them are grand autumn-blooming plants. They are easily increased by spring-struck cuttings or division of the root.

Polemonium cæruleum (Jacob's ladder).—A pretty erect-growing plant, attaining a height of 2 ft., with pinnate or branching leaves. It is a doubtful native of Britain. The variegated form is very pretty, and extensively used in some places for bedding-out purposes, and for using in a cut state as a base or fringe for flowers in small glasses, &c.

Polygonatum multiflorum (Solomon's seal).—A name given it on account of the peculiar markings on its underground root stock; attains a height of 3 ft., and forms a very elegant plant; and, having been found to be a most suitable and valuable plant for forcing purposes, large quantities are grown and annually disposed of for forcing into flower for house decoration, for which use its handsomely-arranged leaves and graceful habit eminently fit it. It will grow almost anywhere. (A native of Britain, possibly introduced by the monks of old.)

Saxifrage.—An extensive genus of compact-growing plants, many of which are suitable for covering pieces of rock, old walls, roots, and

such-like places. These include S. pectinata, whose dark green leaves display the white marginal markings to perfection, S. cæsia, S. diapensioides, and S. squarrosa, which almost rival one another in the diminutive character of the rosettes, all being natives of the Maritime Alps. Amongst those species most deserving of a place in the spring garden are S. cordata, S. crassifolia, S. ligulata, producing their panicles of bright rosy flowers in the month of April, and well adapted for planting in shady places.

Sedum spectabili.—This is a showy autumn-blooming border plant, well adapted, as most of the sedums (stone crops) are, to thrive in a dry, sunny situation; flowers in broad, flattish, rose-coloured cymes or inflorescences, on stems 15 in. high. (South Europe.)

Silene fimbriata is a good perennial plant, with broad leaves, inflated calyx, and whitish petals, beautifully fringed at the margins; 2 ft. high. (Caucasus, 1803.)



SPIRÆA JAPONICA (HOTEIA).

Spiræa.—Besides numerous handsome shrubs, this genus gives us several valuable herbaceous plants of graceful habit and showy appearance, which are most amenable to pot culture and forcing, for which purpose the boldly-cut yet elegant shining green leaves and white feathery spikes of S. japonica (hoteia), showing well above it, admirably fit it. And to this for the same purpose may be added S. palmata. This variety has slightly-lobed palmate leaves, with flattish corymbs of rich, rosy crimson flowers, borne on stems 18 in. high. Propagated by division. (China, 1823.)

S. aruncus (goat's beard) has large divided leaves, with terminal branching panicles of gracefully-disposed yellowish-white flowers; height about 4 ft.; a strong grower requiring plenty of room. (Siberia, 1633.)

Tropæolum speciosum.—One of the most beautiful slender climbing herbs in cultivation, being remarkable alike for its elegantly-cut four to six cleft leaves, and its profusion of small rich crimson and curiously-formed flowers. It has a running underground stem by which it

extends, and by which it is propagated. The climate of the south of England is too hot for this species, unless it is, as it should be, planted and trained against a north wall or fence. In such a position I have seen it growing and flowering most freely in Debenham Bank Gardens, Malvern. In Ivy Cottage, Tynninghame, Prestonkirk, it formed quite an arched entrance to the pretty and very interesting garden attached thereto, and many of the windows in the adjoining town of East Linton (East Lothian) were ablaze with masses of its showy flowers, depending therefrom in almost wild profusion. In many places in Scotland this tropæolum grows like a weed, irrespective of soil or situation.

Veronica.—To the speedwells we are indebted for many plants of a decorative character. They all propagate readily by cuttings of the young growth.

Violas.—Golden Gem and Blue Perfection are two as excellent as they are distinct varieties for spring gardening. Whether used in the rich man's or the poor man's garden it matters not, they being as appropriate and as much at home in one as in the other. They not only flower most profusely in spring, but equally so throughout the summer and autumn months, and continue flowering more or less during the winter. They, like all the varieties cultivated, propagate readily by cuttings and divisions.

HARDY POPULAR AND FLORISTS' FLOWERS. (FIBROUS-ROOTED PLANTS.)

THE AURICULA.

(Primula auricula.)

PRIOR to 1597 this native of the Alps was, according to Gerard, introduced into this country, but during the long interval great improvements have been made in the flower by succeeding generations of florists; and at the present time there are about 200 varieties of the auricula in cultivation. These are divided into five sections—Green-edged, Grey-edged, White-edged, Selfs, and Alpine Auriculas.

Propagation.—Existing good varieties of the auricula, like all other perennial plants, are propagated by division of the plant or cuttings, seed being sown either to raise a stock of plants as a beginning in their culture, or with a view to raise new varieties. Propagation by division is best done in May and June, after the plants have flowered and when being re-potted, or the operation may be performed with equal success early in August. The offsets are taken off with a blunt

kuife, with as many roots as possible adhering to each, and then potted singly into 3-in. pots, having a few small pieces of potsherds placed in the bottom of each, and over them a few half-rotted leaves for drainage, and filled to within $\frac{1}{2}$ in. of the top with a mixture of three-parts light loam and one of sweet leaf-mould and short manure, with a dash of sharp sand added. Make the soil fairly firm about the plants in potting, water, and then place them in a cold frame to establish themselves.

The seed should be sown towards the end of July or early in August, according as the seed is early or late in ripening; it may also he sown in February or early in March. The pans or pots should have a couple of inches deep of potsherds placed in the bottom, and over them a covering of half-rotted leaves for drainage, filling the paus to within 1 in. of the top with a mixture consisting of three-parts sandy loam and one of leaf-mould, passed through a fine-meshed sieve. Sow the seed thinly and cover very lightly with fine soil, making the soil firm before and after sowing the seed. Then place the pans in a cold frame or near to the roof glass in a greenhouse, covering same with a piece of glass; and a little moss being placed over the latter to exclude light will result in the seedlings coming up quicker and more regularly than would otherwise be the case. As soon as the seedlings appear the moss should be gradually removed during the heat of the day, removing it altogether in the afternoon for two or three days, to inure the young plants gradually to light and the internal air of the frame or house, the square of glass being tilted up a little in the meantime, after which date both coverings may be dispensed with. The soil should, as a matter of course, be preserved in a moist state from the time the seed is sown until the seedlings are pricked out in pans or boxes, giving a space of about 2 in. between the plants; and afterwards, when the plants have made three or four leaves, they may be potted singly into 3-in. pots, watered, and gradually hardened off, or they may be planted out 6 in. apart every way in a somewhat shady border, in soil of the description mentioned above. making the soil moderately firm about the roots and giving water to settle it about them.

General Culture.—Although the auricula will do fairly well planted in well drained borders and in soil of average fertility, inclining to be light rather than heavy in texture, the best plants, and, consequently, proportionately good trusses of large, well-developed pips are secured from plants growing in $4\frac{1}{2}$ -in. pots—pots $4\frac{1}{2}$ in. in diameter at the top, inside measurement, and about 5 in. deep—in a cold frame, or stood on planks placed a couple of feet from the ground under a wall or fence having a north-east aspect. This position will suit the plants admirably during the summer and autumn months, ordinary attention

being given them during the growing season, and at all times, in the way of an occasional stirring of the soil with a pointed stick, and applications of weak liquid manure at the roots, pouring it in at the edge of the pot so as not to let it on the foliage. Great care, however, must be exercised in the matter of giving water, letting the soil get a little dry before repeating the application. The end of October or early in November place the plants in a shallow frame, in front of a wall, hedge, or fence having a south or south-west aspect, standing the pots on a bottom of cinders covered with sifted coal-ashes, allowing a clear space of 2 or 3 in. between each and all of the plants, and give all the air possible during favourable weather, keeping the soil in which the plants are growing almost dry during the interval from November to February, covering the frames with mats and fern as a protection from frost.

During the last week of February and throughout the two following months the soil about the roots should be kept uniformly moist, admitting abundance of fresh air to the plants as before. Remove the old soil to the depth of 1 in. and top-dress with an admixture of pulverised cow manure and light loam in about equal parts. Expose the plants to the refreshing and invigorating influence of light showers until they have sent up their flower-spikes, early in April, by removing the sashes for a short time a few times a week, opportunity occurring. When the flower-spikes appear, the plants, as already hinted at, should not again be exposed to rain until they have done flowering, as that would interfere with the proper development and colouring of the flowers; and, with the same object in view, the frames should be protected from spring frosts in the manner described above. When the plants are opening their flowers they should be transferred to a frame placed in front of a wall, hedge, or fence having an east aspect, so that the plants may have the benefit of the sun before it becomes too powerful for the plants to be profitably exposed to after ten o'clock in the morning. As the pips open, the smallest, least perfect, and crowded ones should be carefully thinned out, leaving a truss consisting of from five to nine—that is, five, seven, or nine pips to the truss. When in full bloom they may be removed to the greenhouse, or any other cool, airy structure desired to embellish with their presence, and where they can be seen to advantage.

The following are a few of the best cultivated varieties:-

GREEN-EDGED.—Anna, Apollo, Colonel Taylor, Duke of Wellington, George Lightbody, Lord Nelson, Lord Palmerston, Mrs. Butcher, Mrs. Clark, Ploughboy, Rob Roy, Tam o'Shanter.

GREY-EDGED.—Alexander Meiklejohn, Britannia, Colonel Champneys, Competitor, Inkerman, Lady Jane Grey, Matilda, Morning Star, Ne Plus Ultra, Perfection, Ringleader, Unique.

White-Edged.—Acme, Arabella, Bonny Lass, Bright Venus, Countess of Dunmore, Dr. Kidd, Fair Maid, Lady Sophia, Lady Sale, Lord Chancellor, Model, Smiling Beauty.

Selfs.—Bessie Bell, Black Prince, Desdemona, Empress, Formosa, Ivanhoe, Lord Lorne, Master Hole, Mrs. Douglas, Royal Purple, Ruby, Yellow Prince.

ALPINE AURICULAS.—Albert, Bertha, Brilliant, Bronze Queen, Countess, Fairy Ring, Fred Copeland, King of the Belgians, King of Crimsons, Marchioness of Westminster, Mrs. Dodwell, and Prima Donna.

THE CARNATION and PICOTEE.

(Dianthus caryophyllus.)

ALTHOUGH the carnation has been cultivated in this country during the last four or five centuries, it is uncertain whether the species from which the numerous varieties have been raised were indigenous to Great Britain or were introduced from Italy. Chaucer, who wrote in the fourteenth century, makes mention of the clove, carnation, or girofler, as it was then called. This name, derived from the French giroflier (clove), was probably given on account of the strong spicy aroma of the flowers. and it afterwards became corrupted into gillyflower, or July flower. The above names may have arisen from the fact of the plant flowering in July. Some idea may be formed of the number of varieties cultivated in gardens at the present day from the fact that Rea, in 1676, gives a list of 360 varieties of all sections of this always popular flower then cultivated. "They are divided into three sections - bizarres, flakes, and picotees. Bizarres are those in which the white ground colour is striped with two colours, one of which is darker than the other. Flakes are those in which the ground colour of the petals is striped with only one colour—purple, scarlet, or rose. Picotees, instead of being striped, have the petals edged with various shades of red, purple, rose, or searlet. the band of colour being more or less dense, and of greater or less breadth in different varieties. Florists speak of the picotee as though it were a distinct plant from the carnation, yet both may be raised from seed produced in the same seed-pod, and both require the same treatment."—Gardeners' Assistant.

Propagation.—This may be effected in three ways, namely, by seed, layers, and pipings or cuttings. Seed may be sown any time between February and May, using well-drained pans filled to within about 1 in. of the top with fine sandy mould, scattering the seed thiuly and covering it lightly with the same description of mould, making this firm with the hand before and after sowing, and watering through a fine-rosed

watering can, and then placing the pan in a hot bed with a square of glass over the pan, and over it a little damp moss. This should be removed as soon as the seedlings appear, the glass being tilted up a little for a few days before being finally taken off. The seedlings should be pricked out in a box 2 in. apart, as soon as large enough to handle, in the same kind of soil recommended above, watering lightly to settle the soil. Place the boxes in a frame, keeping it close and shading the plants from sunshine for a few days until the roots have taken hold of the soil, when it should be discontinued, and the quantity of air previously admitted to the frame be gradually increased in accordance with the progress of the plants and the increasing warmth and lengthening of the days. When the young plants have made five or six leaves, they may be planted out in rows 12 in, apart and at the same distance in the rows. making the soil firm about the roots in planting; or they may, if intended for pot culture, be potted singly in 3-in. pots. If the seed is not sown till May, the pans can be placed underneath a hand-light under a south or west wall or fence out-of-doors, placing a mat over the hand-light day and night until the seedlings appear, when they should be treated as already advised.

Cuttings or Pipings.—Cuttings are taken off as soon as they can be obtained, usually about the end of June. Place hand-glasses over a few inches deep of fine mould (three-parts sandy loam and one of leafmould), with a surfacing of sand. Into this "dibble" the cuttings 2 in. apart every way; the cuttings should be about 3 in. long, the lower pair of leaves being removed by a sharp knife before being "dibbled" into the soil, afterwards watering gently, keeping the light close and shaded from bright sun until rooted, after which they should be treated in the manner advised for seedlings. If large quantities of plants are desired to be raised from cuttings, a shallow frame should be placed on a gentle hot-bed, placing therein 4 or 5 in. deep of fine soil, so as to bring it within a like distance of the glass, surfacing this with sand to the depth of $\frac{1}{2}$ in., and then dibble the cuttings into it as described above, pressing the soil about the individual pipings in putting them in with the dibble. The frame should be kept close and be shaded during the heat of the day, admitting a little fresh air every day to dispel or prevent too much damp settling on the cuttings.

Layering is the mode usually adopted in the propagating of varieties of established plants, and the earlier this operation is performed in August the better. If a little light soil is placed around and underneath the plants, with a surfacing of sand, the layers will root more quickly than would otherwise be the case. In layering, remove a few of the bottom leaves with a sharp knife, and cut the stem half-way through from the lower joint in an upward direction for about 1 in., then bend the stem of the plant down to the prepared soil, inserting the tongue

formed by the upward cut therein, and securing it with a crooked peg. In this way a few hundred layers may be made by an experienced hand in a few hours; care, however, should be taken not to cut the stem too far through, and not to break the individual "grasses" operated on in the act of bending it downwards. Water should be given through a rose to settle the soil about the layers, repeating the application every afternoon in dry weather until roots are formed in numbers. Thus treated the layered shoots will be sufficiently rooted by the end of September to be detached from the parent plants close to the joint at which they were layered, taking them up with balls of soil adhering to the roots, and either potted up singly into 3-in. pots and stood in a cold pit or frame near to the glass during the winter months for transplanting out-of-doors early in March, or be planted out at once.

Soil.—Leamy soil, of medium texture and average fertility, resting on a gravelly subsoil—that is, neither too stiff nor too light, and fairly rieh—will be congenial to the requirements of the carnation.

Planting.—Here in the west of England I never pot up my layered border earnations for wintering in cold pits or frames. I usually plant direct from the beds into which the plants are layered early in October; but this year I did not do so until early in April, lifting the plants with good balls of earth attached and carefully transplanting them, and afterwards watering at the roots. Prior to planting, the ground, as a matter of course, is dressed with short manure and dug, breaking the soil fine in digging, trodden over and surface-dressed with soot and wood ashes, this being scratched into the soil with an iron rake in making the ground level. This will save the plants from the attacks of wire-worms and grubs, which sometimes work great mischief at the roots of these and other plants. The plants should be set out in rows, 1 ft. apart, and at the same distance from plant to plant in the rows, letting them down well to the grass-like foliage and making the soil firm about the roots in planting, afterwards watering through a rosed watering can to settle the soil. The plants in each succeeding row should be set opposite the space between the plants in the preceding row. in addition to giving the plants more room to develop themselves than would be the case if set opposite each other in the rows, looks better, the plants, if set out with precision, being in a line the whole length of the border, viewed from whatever standpoint they may. If the plants are planted in October a surface-dressing of wood or coal ashes to the thickness of about 2 in. should be laid ou between the plants. This will prevent frost reaching the roots.

After Treatment.—This consists in keeping the plants free from weeds, giving water at the roots during the growing season in the absence of rain—plants growing in light soil requiring such applications

oftener than those growing in soil of a heavier texture do—and supporting the flower stems with suitable-sized sticks and a piece of matting twisted loosely round them to allow of the ties rising a little with the growing stems. If fine blooms are desired the buds should be thinned out to one on each stem, retaining the crown or central bud.

Tree Carnations.—These have sprung from D. caryophyllus. They appear to have been introduced from the Continent. They are grown for winter flowering, but they may be had in flower all the year round. Hence the term "perpetual flowering," under which additional name they are also known. These are generally propagated by slipping young shoots or cuttings off the plants in January or February, and inserting them round the edges of 3-in. pots, properly drained and filled with light soil, with a little sand on top, watered, and plunged in a gentle bottom heat in a hot-bed, shading from bright sun, and potting off singly into the same sized pots as soon as rooted, watered, and returned to heat, giving air on favourable occasions as growth and the season advances to ensure sturdily grown plants. They may also be increased by planting out the old plants in April or May in prepared soil, and layering the shoots as advised above, afterwards potting them up.

Of many excellent varieties of the carnation in cultivation at the present time, those enumerated in the following brief lists may be relied upon.

BORDER AND CLOVE CARNATIONS.

- 1. Mrs. Reynolds Hole is of recent introduction, and is a decided acquisition to this popular class of flowers. It is a very robust grower, hardy, very floriferous, is of an entirely new and distinct shade of colour, being rich apricot salmon with amber shading. The flowers are solid and well formed, but lack perfume.
 - 2. Alice Ayres.—White, tipped with carmine, and of fine shape.
 - 3. Blush Clove is a variety of the old clove.
- 4. Comte de Chambord.—Vigorous grower, producing large white flowers.
 - 5. Dandy Dinmont.-Glowing crimson, very fine.
 - 6. Dolly Varden.-White, heavily-flaked rose.
- 7. Duchess of Westminster.—Robust, richly scented, smooth white flowers.
 - 8. Euphrosyne.-Very bright pink, distinct and fine.
 - 9. General Stewart is a deep rich crimson and a good grower.
 - 10. Glorie de Nancy.-Pure white, and very large.
 - 11. Mary Morris.—Deep rose, deliciously scented.
 - 12. Old Clove.—Deep crimson, and very fragrant.

76. Henry Cannell.

78. John Ball.

77. Henry Matthews.

SHOW CARNATIONS.

Scarlet Rizarres

$Scarlet\ Bizarres.$			
	13. Admiral Curzon.	19. Lord Napier.	
	14. Apollo.	20. Master Stanley.	
	15. Arthur Medhurst.	21. Philip Thomas.	
	16. Ben Simonite.	22. Robert Lord.	
	17. Charles Turner.	23. Jim Whittaker.	
	18. Guardsman.	24. Tom Power.	
	$Crimson\ Bizarres.$		
	25. A. D. Southgate.	31. Rifleman,	
	26. Crimson Banner.	32. Robert.	
	27. Dr. Masters.	33. Saturn.	
	28. E. S. Dodwell.	34. Stanley Hudson.	
	29. Harrison Weir.	35. Thomas Moore, Jr.	
	30. Lord Milton.	36. Winsome Winnie.	
	Pink and Purple Bizarres.		
	37. James Taylor.	43. Mrs. James Whitbourne.	
	38. Joe Bagstock.	44. Princess Beatrice.	
	39. Lady of the Lake.	45. Sarah Payne.	
	40. Millie.	46. Thomas Austiss.	
	41. Mrs. Austiss.	47. T. S. Ware.	
	42. Mrs. Barlow.	48. William Skirving,	
$Purple\ Flakes.$			
	49. Ajax.	55. Major Gan.	
	50. Dr. Foster.	56. Master of Balliol.	
	51. Earl Stamford.	57. Mayor of Oxford.	
	52. Earl of Wilton.	58. Squire Trow.	
	53. Florence Nightingale.	59. Squire Whitbourne.	
	54. Lady Peel.	60. Warden of Wadham.	
$Rose\ Flakes.$			
	61. Bijou.	67. James Flowdy.	
	62. Delicata.	68. Jessica.	
	63. Dolly Varden.	69. Madge Wildfire.	
	64. Dorothy's Sister.	70. Maggie Lauder.	
	65. Eglantine.	71. Mrs. Carter.	
	66. Fair Rosamond.	72. Mrs. Power.	
Scarlet Flakes.			
	73. A. Holmes.	79. Mr. Allen.	
	74. Dan Godfrey.	80. Mr. Carter.	
	75. Frank Tomes.	81. Robert Morris.	

82. Scarlet Keet.

84. Tom Chapman.

83. Sportsman.

TREE OR PERPETUAL FLOWERING CARNATIONS.

- 85. A. Alegatierre.—Bright scarlet.
- 86. Andalusia.—Soft yellow, fringed edges, but scentless.
- 87. Duchess of Westminster.—Pure white, smooth, very fragrant.
- 88. Duke of Albany.—Deep rich scarlet.
- 89. La Belle.—Pure white.
- 90. La Favori,—Bright rose pink.
- 91. Lucifer.—Intense scarlet.
- 92. Miss Joliffe.—Blush pink.
- 93. Souvenir de la Malmaison.—Blush white, immense size, and very sweet; the "king" of carnations.
 - 94. Souvenir de la Malmaison.—Crimson.
 - 95. Souvenir de la Malmaison.—Pink.
 - 96. Valencia. Dark clove, fringed, and very fragrant.

COLUMBINE.

(Aquilegia.)

Is an extremely elegant free-blooming hardy perennial, suitable for beds, borders, shrubberies and positions in close proximity to carriage drives, as well as for growing in pots for embellishing the greenhouse, rooms, &c. Besides our own wild species, A. vulgaris, there are many excellent varieties admirably adapted for groups, either in the separate colours or mixed; the best of these are:—

- 1. Cærulea.—Handsome pale blue and white flowers; especially adapted for pot culture.
 - 2. Chrysantha.—Pale yellow, contrasting effectually with A. cærulea.
- 3. Glandulosa.—Beautiful blue and white flowers; of a dwarf, compact habit, and very free flowerer.
 - 4. Skinneri.—Very attractive, scarlet and yellow flowers.
- 5. Truncata (syn. A. californica).—Flowers orange colour, approaching to scarlet ontside, the inside of the petals a beautiful yellow; flowers in July; height 2 ft. to 3 ft., according to the quality of the soil and climate.
 - 6. Caryophylloides.—Striped flowers of various colours.
- Soil.—The aquilegia prefers a light, rich soil, and may be easily increased by division of the roots and by seed; the colours are, however, likely to get mixed in following the latter method of procedure.

THE HOLLYHOCK.

(Althea rosea.)

This old-fashioned back row border plant is a native of China, and has been grown in gardeus in Great Britain and Ireland during the last 350 years. It is a very showy plant when in flower, the spikes, ranging in height from 7 to 10 ft., according to variety, climate, and soil, closely studded with large flowers of every shade of colour, from pure white to bright crimson, being very striking objects, especially when contrasted with surrounding floral objects usually associated with the hollyhock. During the last forty years great improvements have been effected in the cultivated varieties of this popular plant by intelligent cross fertilisation of the best types of seedling varieties, with the result that at the present day there are about 100 named varieties in cultivation.

Soil.—Although the hollyhock will succeed in any fairly good soil, it will, like most other plants, do better in good loamy soil, inclining to be heavy rather than light, enriched with well-decomposed manure, well incorporated with it in the process of digging. A mixture of sifted sandy loam and leaf-soil (about three-parts of the former to one of the latter) should be used for striking cuttings and sowing seed in.

Propagation.—The hollyhock is increased by means of seed, by division of the established plants, and by cuttings. Fixed types or varieties are perpetuated by means of the two last-mentioned methods. and new varieties by crossing the flowers of good, promising varieties, and afterwards sowing the seed saved from the fertilised flowers outof-doors, in an open situation, in June or July, covering the seed with fine soil to the thickness of $\frac{1}{2}$ in., making the same firm, and then watering through a rosed can, repeating the application during dry weather, so as to maintain the soil in a uniformly moist condition. When the seedlings have made two or three leaves they should be carefully taken up, with soil adhering to the roots, and potted singly into 3-in. pots, watered, and placed in cold frames to winter, planting them out towards the end of April. The seed may also be sown in pans filled with rich soil in February or early in March, watered, placed in heat, afterwards potting off the seedlings, and, finally, transplanting them about the end of May or early in June, according to circumstances. giving a space of 4 ft. between the plants in the rows and making the soil firm about them in planting. Endeavour to maintain the soil in which the plants are growing in a uniformly moist state during the growing season. This latter remark applies with equal force to all plants during that period of activity. Propagation by division of the roots is effected after the plants have gone out of flower. One or more young shoots should be slipped off the sides of established plants with

the assistance of a sharp spade or garden trowel, and either be potted up or planted out in good soil in rows 15 in. apart and at the same distance from plant to plant in the rows, watering to settle the soil, and transplanting in the positions in which they are intended to flower the following April. Cuttings taken off close to the ground as soon as obtainable, at 3 in. long, and inserted in 3-in. pots filled with sandy soil, watered gently, and then placed in a cold frame and kept close and shaded for a week or ten days, after which the shading may be dispensed with, as the cuttings will meanwhile have calloused, and a little air should then be admitted, increasing the amount given as the plants advance in growth.

The following are reliable varieties to grow:-

- 1. Agnes Berry.-Light rose lilac.
- 2. Apple Blossom.—Bright rose.
- 3. Crimson King. -- Crimson, fine.
- 4. Duchess of Roxburgh.—Primrose, shaded salmon, very fine.
- 5. Her Majesty.—Pure white, good form.
- 6. Honourable B. Hamilton.—White, shaded magenta.
- 7. Invincible.—Blush, very fine in form.
- 8. Lord Jerviswood.—Rich pink, dark base.
- 9. Lord Middleton.—Deep rose.
- 10. Marchioness.—Deep pink, fine.
- 11. Mrs. A. Kerr.—Beautiful yellow.
- 12. Sulphur Queen.--Sulphur, good form.

LARKSPUR (Perennial).

(Delphinium.)

This is one of the most beautiful hardy herbaceous perennials in cultivation; both foliage and habit of the plant are alike showy and imposing in appearance when contrasted with the fine spikes of flowers of every shade of blue, and delicately tinted, which surmount them. A great improvement has been effected in the perennial larkspur during recent years, the **D**. formosum having been used as a seed parent, subsequently crossing or fertilising the flowers produced by the seedling plants resulting from the seed of **D**. formosum, selecting flowers of best types for operating on. The flowers of many of the single varieties are of great size, those of the double varieties being smaller, but studded closely together on the spikes, which vary in height according to variety, situation and nature of soil, some varieties attaining a height of 5 ft.

Soil and Cultivation.—Given a deep, rich soil of medium texture, and an open, sunny situation, and ordinary after attention in the way of watering at the roots and mulching between the plants during the spring and summer months, and the delphinium will grow and flower most satisfactorily. Strong, well-established plants of delphiniums forming the hack row of a mixed border is very telling in effect. They are equally effective planted in large beds, the taller-growing plants being placed in the centre and the dwarfer ones outside; or the plants may be pegged down in the beds. Care and experience are necessary to do the work properly without breaking the stems. Thus treated, a low surface with flower spikes rising 10 in. to 20 in. above it is secured. Delphiniums are most useful in a cut state for filling vases, with a garnishing of their own beautiful foliage or other greenery. Tall-growing varieties should be given support, otherwise the spikes of flowers will probably get broken by the wind.

Propagation.—This is easily done by dividing the roots and planting the divisions either in a nursery bed or where the plants are intended to flower. Plants may also be raised by sowing seed in shallow boxes. having a few holes in the hottom covered with potsherds and a few half-rotten leaves as drainage, filling the boxes with light, fine, sandy mould to within an inch of the top, scattering the seed thinly over the surface, covering it lightly and making the soil firm before and after sowing the seed; then water through a fine rose, covering the box with a square of glass, and over it sufficient moss to exclude light. Place the box in a cold pit and trust to time for the appearance of the seedlings, which in some cases do not come for twelve months, when of course the glass and moss should be gradually removed. Good varieties must be propagated by division of the roots. This is best done, towards the end of July or early in August, by cutting down the plants after they have flowered, and subsequently carefully taking up the off-sets with a garden trowel and potting singly into 3-in. pots in light, rich mould; make this moderately firm about the roots in potting, place the pots in a cold pit, giving water to settle the soil and shading from bright sun for a few days. Failing the cold pit and pot accommodation, the young plants may be planted out in a warm sheltered corner, in the description of soil indicated, in rows about 15 in. apart and at the same distance from plant to plant in the rows. making the soil firm about the roots and giving water as advised above; and, the weather being hot and dry at the time, a few old mats supported by forked sticks, with others laid longwise and crosswise, or a few spreading boughs stuck in between and outside the rows of plauts, will be of advantage to them.

In the following short list will be found some of the best varieties to grow:—

SINGLE-FLOWERED VARIETIES.

- 1. Amethyst.—Blue, white eye.
- 2. Ariel. -Sky blue, white eye.
- 3. Aristotle. Azure blue, white eye.
- 4. Barlowi.—Deep blue, shaded bronzy-red, orange centre.
- 5. Belladonna.—Azure blue, white eye, very dwarf.
- 6. Bicolor. Bright blue, white centre.
- 7. Bicolor grandiflorum.—Light blue, white eye.
- 8. Brilliant.—Blue, metallic shade, white eye, fine.
- 9. Chameleon.—Bright blue, dark brown centre.
- 10. Cleopatra. Dark blue, white eye, fine spike.
- 11. Grandiflorum.—Lavender blue, white centre.
- 12. Lord Granville.—Deep violet, large.

DOUBLE-FLOWERED VARIETIES.

- 1. Argus.—Sky blue, very double, compact spikes.
- 2. Azureum plenum.—Azure blue.
- 3. Claire Courante. Brilliant azure blue and white.
- 4. Diadem.—Azure blue, with metallic shade, semi-double, fine.
- 5. Drummondii.
- 6. Elatum flora plena.—Sepals blue, petals rose purple.
- 7. Enchantress. -- Sky blue, very large.
- 8. Etoile.—Violet blue, white centre, large, semi-double.
- 9. Le Thibaut.—Violet and bronze.
- 10. Magnetism.—Berlin blue and white.
- 11. Mdme. E. Genny.—Fine violet blue and white.
- 12. Mdme. Partar. Indigo blue, white centre.

LOBELIA.

This has been considerably improved in recent years. Many bright, soft, and pleasing colours have resulted from the deep crimson colour of the parents, **L. fulgens** and **L. ignea**. The herbaceous lobelia is quite amenable to pot culture, and so grown forms striking objects in many a greenhouse and conservatory, being veritable bushy pyramids of scarlet, and almost every shade of colour between that and clear peach.

Soil.—Given a rich, sandy, loamy soil, about 18 in. deep, resting on a chalky or gravelly subsoil, and a south or west aspect, and the lobelia will grow and flower most freely. If the soil is naturally stiff, a liberal dressing of short mauure, leaf-mould, and wood-ashes should be applied, well mixing the whole in deeply digging or trenching it into the ground. Peaty soil, if more come-atable, may be substituted for leaf-mould.

Pot Culture. —Well-established plants may be carefully taken up with good balls of earth, and be potted into well-drained 8-in. or 10-in. pots —I mean 8 in. or 10 in. in diameter—ramming the soil (of the same description indicated above) well between the ball and the side of the pots in potting. Then stand the plants in the shade and water at the roots. A week or ten days later, after the plants have thoroughly re-established themselves, they should be given a sunny aspect, plunging the pots to the rims in coal-ashes to prevent the soil drying too quickly, and attending to them in the matter of giving water at the roots when the soil is dry, giving occasional waterings of weak liquid-manure or surface-dressings of some of the plant manures immediately before watering, so that the virtues of same may be washed down to the roots at once instead of being partly lost by exposure to light and air. When the flowers begin to open the plants should be taken indoors.

Propagation.—This is easily effected by cuttings, off-shoots, suckers, or seeds. Cuttings, 3 or 4 in. long, taken in June and inserted in sandy soil under a hand-light, placed on a border having an east aspect, and watered through a rosed watering can, will soon take root, after which a little air should be given, increasing it afterwards until the young plants are transferred to their flowering position, either in pots or in the herbaceous border or beds.

Seed.—As soon as the seed is ripe it may be sown in pans, drained, and filled with sandy soil, covered lightly, and watered gently, making the soil firm on the surface before and after sowing the seed, placing the pan in a cool frame or under a hand-light. In early spring, when the young plants are large enough to handle, they should be pricked off into pans or boxes, watered, and grown on into size under the protection of a frame or hand-lights.

In the following brief list will be found many pleasing shades of colour:—

- 1. Annihilator.—Deep rose, shaded with violet.
- 2. Carminata.—Pleasing rosy carmine.
- 3. Charles Landseer.—Brilliant crimson, shaded maroon.
- 4. Distinction.—Rosy cerise, tinted with pink.
- 5. Excellent.—Bright magenta, white centre.
- 6. Grand Duchess Marie.—Pure pale pink.
- 7. Nonsuch.—Violet.rose, margined with vermilion.
- 8. Peach Blossom.—Clear peach, very pretty.
- 9. Ringleader. Light purple, with deep shading.
- 10. Roi des Bleus.—Lavender blue.
- 11. Ruby.—Rich ruby, novel and distinct.
- 12. Victoria Regina.—Rich scarlet, very showy.

THE MIMULUS.

(Mimulus luteus.)

The yellow monkey flower, as this spotted flower is commonly called, is an old inhabitant of country gardens, and is a very free-growing and profuse-flowering plant, many of the hybrids resulting from crosses effected between M. cupreus, a variety introduced from Chili and producing, as the specific name indicates, coppery red flowers; and some of the large flowering garden varieties are subjected to pot culture for the embellishment of greenhouse, rooms, and windows. Window boxes planted with such varieties as M. maculosa and M. tigrinus are most effective in May, June, and the early part of July, after which the mimulus plants could be planted out in the reserve border, and the boxes be refilled with geraniums, mignonette, blue lobelia, yellow calceolaria, &c., for continuing the floral display during the remaining summer and autumn months.

Propagation.—This is readily performed either by seeds sown in the ordinary way or division. The plants are not particular as to soil, but they will do really well in a light, rich, moist mould. In growing the plants in pots the principal shoots should be stopped when 3 or 4 in. high, to encourage the production of strong side growths, staking these out neatly in good time to allow of the plants assuming a good shape, hiding the sticks completely with their rich foliage and vigorous shoots: Doses of weak guano water at the roots occasionally during the growing season will be conducive to the production of large well-marked flowers.

THE PANSY, or HEARTSEASE.

THE numerous varieties of this popular flower now in cultivation have been obtained mostly from viola tricolour, a native of Britain, by selection and crossing with other species. Many of the new flowers are of immense size, and the colour rich and varied.

Soil.—For the ordinary embellishment of beds or borders the pansy will grow in the same kind of soil as ordinary bedding plants will, say rich soil, inclining to be light and sandy rather than the reverse. For the culture of choice varieties which the cultivator is anxious to grow as well as possible, select a border having either an east or west aspect, and, unless the natural soil be of the description indicated, remove from 15 in. to 18 in. deep of the surface, and replace it with an admixture of about three parts sandy loam and one of leaf-soil and well-decomposed manure, the whole being thoroughly mixed before being laid in position. Before setting out the young plants, lay on a good surface-dressing of soot or wood-ashes, and slightly fork it into

the ground, making the latter level in doing so. This will save the roots from the attacks of the grubs, wire-worms, and other creatures injurious to healthy root and top growth. In planting allow a space of 12 in. every way to weakly-growing plants, giving 3 in. more to more robust-growing ones, making the soil firm about the roots in planting, and afterwards watering to settle the soil.

Propagation.—This is done by seeds, cuttings, and layers. Seeds may be sown any time in April or May and in August and September, using pans having about an inch of potsherds in the bottom, with a covering of moss or half-rotted leaves as drainage, and filled to the rim with fine sandy soil. The seed should be sown thinly and covered lightly afterwards, gently watering, and placing in a close frame. When the seedlings are large enough to get hold of, prick into pans or shallow boxes 3 in. apart, water, and shade from sun for a few days until the roots have taken to the soil, after which the shading should be dispensed with, and the plants be given more air and gradually hardened off prior to planting them where they are to flower in the manner described above.

Cuttings may be struck any time during the growing season, inserting the cuttings in sandy soil 3 in. apart under a hand-light, or in rows 6 in. asunder and at 3 in. in the row on an east or west border, sprinkling them over every fine afternoon through a fine rose.

Culture in Pots.—Select and pot up the most sturdily-growing plants of the approved varieties any time from the middle to the end of September, using pots from $4\frac{1}{2}$ in. to 6 in. in diameter, with a couple of inches deep of drainage (putting the larger crocks in the bottom and the smaller ones on the top), placing the plants the same depth in the pots as they were in the beds, and then stand the pots on sifted coal-ashes within a few inches of the glass in a frame placed on a south border, giving water at the roots and shading from bright sun for a few days. Give as much air and light as possible to the plants during the interval from September to February, water being sparingly and carefully applied at the roots, protecting from frost by covering the frames with fern, or whatever protecting material may be most convenient. Towards the middle of February a few of the strongest plants, if large specimens are desired, may be shifted into 8-in. pots, removing a little of the surface soil and loosening the sides of the balls with a pointed stick in potting, for which purpose the mixture recommended above will do. attention consists in watering, thinning, tying or pegging of the shoots. In May the plants should be placed in a green-house or a frame having an east aspect, or a north in preference to a south one. Weak liquid manure may, during the flowering period, be given twice a week to weakly-growing varieties, but not to strong-growing ones, as its application would tend to the production of coarse blooms.

In the following short lists of the several sections of the pansy will be found the best varieties:—

SHOW PANSIES.

Dark Selfs.

- 1. Alexander MacNab.—Dark purple.
- 2. Alexander Scott.—Blue self, dense blotches.
- 3. A. L. Thompson.—Dark glossy purple.
- 4. A. Lyle.—Deep plum.
- 5. Andrew Miller.-Light plum, extra.
- 6. Colonel Muir. Fine dark self.
- 7. Harry Paul. Mauve purple, extra fine.
- 8. Lord Derby.—Dark plum.
- 9. Mauve Queen.—Clear mauve, fine.
- 10. Peter Lyle. Very dark.
- 11. Prince Leopold.—Dark purple.
- 12. Utopia.—Dark, shaded blue.

Yellow Selfs.

- 13. Archibald Rowland.—Yellow, dense blotch.
- 14. Canary. -- Light canary, umber blotch.
- 15. Chromatella.—Chrome yellow, umber blotch.
- 16. George Rudd.—Yellow, dense blotch.
- 17. King Koffee.—Deep yellow.
- 18. Milkmaid.—Cream, large and fine.
- 19. Miss L. H. Bowie.—Primrose self, fine.
- 20. Mrs. Horsburgh. Deep orange self, fine.
- 21. Mrs. Oswald.—Primrose, mulberry blotch.
- 22. Ophir. -Pure yellow.

White Selfs.

- 23. Christina.—Pure white, smooth.
- 24. Flag of Truce.—Pure white, good.
- 25. Gazelle.—Pure white, perfect form.
- 26. Highland Mary.—White, large.
- 27. May Queen. White, medium blotch, free.
- 28. Mrs. Cadzon. Pure white, extra fine.
- 29. Mrs. Dobbie. —Dense blotch.
- 30. Mrs. Galloway. Pure white, solid.
- 31. Mrs. Inglis. White, dense black blotch, free.
- 32. Mrs. MacMillan.—Violet purple blotch.
- 33. Mrs. Shand. White, violet purple blotch.
- 34. Queen of Whites.—White, dense blotch.

White Grounds.

- 35. Alice Downie.—Cream, very free.
- 36. Donald McBean.—Pure white, bright purple belting.
- 37. Elsie Thompson.—White, purple belt.
- 38. Miss Adamson.—White, deep maroon belt.
- 39. Miss Annie. White ground, fine.
- 40. Miss Barr.—Light purple belting.
- 41. Miss Langley. White, medium, good blotch.
- 42. Mrs. Bunyard. White, rich purple border.
- 43. Mrs. Fraser. White, dark purple margin.
- 44. Mrs. John Thompson. -- Blue purple margin.
- 45. Mrs. Kennedy. Fine purple belt.
- 46. Mrs. Moffat. Narrow purple belt.

Yellow Grounds.

- 47. Acme. Deep purple border, brown blotch.
- 48. Bronze Queen.—Deep yellow, bronze purple belt.
- 49. Captain Clutie.—Bronze purple belt.
- 50. James Black. -Gold yellow, rose purple belt.
- 51. James Malcolm. Golden yellow, red bronze belt.
- 52. Robert Burns. Lemon, chocolate belt, solid blotch.

FANCY PANSIES.

- 53. Alexander Brown. -Bronze crimson, large.
- 54. Bella Forbes.—Mauve blotches, margin and upper petals cream.
- 55. Betsy Bell. Straw, densely blotched.
- 56. Countess of Home. —Yellow and bronze, chocolate blotch.
- 57. Countess of Strathmore. Light flower, immense blue blotch.
- 58. Edith.—Lemon self, mulberry blotch, large and fine.
- 59. Evelyn Bruce.—Mulberry blotches, upper petals yellow and crimson.
- 60. Favourite. Lilac, blue blotches.
- 61. Mrs. Felton.—White, blue purple blotches.
- 62. Mrs. Findlay. French white, dark blotch,
- 63. Mrs. G. Grant. Golden yellow, dark blotch.
- 64. Robert Cowan.—Purple, yellow edge.
- 65. Robert Goodwin. Maroon, laced yellow.

THE PINK.

This fragrant flower, the supposed type of which (Dianthus plumarius) is naturalised in Britain, is of very easy culture. It may be propagated and grown exactly in the same manner recommended for carnations.

It is a favourite with florists, as there is always a ready sale for well-developed blooms. It is very likely that **Dianthus caryophyllus** and **D. deltoides** have contributed towards the production of the many fine varieties of pink now in cultivation, of which the following list may be relied on:—

SHOW VARIETIES.

- 1. Bragg's Goliath.
- 2. Bragg's Hector.
- 3. Annie Chater.
- 4. Beauty of Bath.
- 5. Kirkland's Rev. Geo. Jeans.
- 6. Maclean's Annie.

- 7. Marris' Arabella.
- 8. Marris' Vesta.
- 9. Shirley Hibberd.
- 10. Bertram.
 - 11. Blondin.
- 12. Dr. Masters.

FORCING VARIETIES.

- 13. Anne Boleyn.—Rose, crimson centre.
- 14. Derby Day. -Large, deep pink, bright red lacing.
- 15. Favourite.—Pure pink.
- 16. Isabel.—Fine blush.
- 17. Lord Lyons.—Deep rose purple.
- 18. Meteor. -- Rose, crimson centre.

BORDER VARIETIES.

- Mrs. Sinkins.—Yielding a profusion of white blooms of good size.
- 20. Albino.—Extra large flowers, pure white, and nicely fringed.

THE POLYANTHUS.

(Primula acaulis umbellata.)

This old-fashioued plant is held in high esteem by many people on account of the habit of growth of the plant, and the size, form, and beautiful gold lacings of the flowers. The plant may be propagated by seeds sown in the manner recommended for pansies, and by dividing the plants after they have done flowering in the summer. The plants will do well in the same description of soil as that advised for the pansy; indeed, it will grow satisfactorily in any kind of fairly good, sandy, loamy soil. Established plants may also be divided at the time of planting in the beds in October, after the beauty of the summer occupants of the beds is over.

The following varieties may be depended upon :-

DARK GROUND LACED VARIETIES.

- 1. Alexander.—A good, bold flower.
- 2. Cheshire Favourite. Extra fine, rich lacing.
- 3. Earl of Lincoln. -Extra fine, large and bold.

RED GROUND LACED VARIETIES.

- 4. Exile. -A fine variety.
- 5. George IV.—Very large, but apt to come coarse.
- 6. Lancer. Very free and striking.

FANCY AND BEDDING VARIETIES.

- 7. Elatior Cærulea.—Blue oxlip.
- 11. Hose-in-Hose.—White.
- S. Hose-in-Hose.—Brown.
- 12. Jack-in-the-Green.
- 9. Hose-in-Hose.-Yellow.
- 13. Zulu King.
- 10. Hose-in-Hose.—Golden gem.

THE PYRETHRUM.

(Pyrethrum roseum.)

In the pyrethrum we have an extensive and most useful and showy class of plants, the aster-like flowers, both single and double, being produced freely from early in May till October, and of almost every shade of colour from pure white to brilliant crimson. The pyrethrum is a robust and free-growing plant, doing well in any ordinarily fertile, open soil. It is easily propagated by dividing the roots after the plants are gone out of flower, and by taking the off-sets or side shoots which are freely produced in July and August, and planting them out in prepared soil to get established before being finally transplanted, meanwhile keeping a sharp look-out for slugs, which are apt to attach the plants.

Of the 200 or more varieties of the pyrethrum in cultivation, the following are some of the best and most reliable to grow:—

DOUBLE VARIETIES.

- 1. Ajax.—Purple crimson.
- 2. Amethyst.—Deep pink, yellow centre.
- 3. Boule de Niege.—White, tinted rose.
- 4. Carminatum plenum.—Dark carmine, large flowers.
- 5. Carneum plenum.—Blush white, compact habit, large.
- 6. Celol.—Very bright pink.
- 7. Cleopatra. Yellow, tinted white, distinct.
- 8. Delicatissima.—Rose lilac, orange anemone centre.
- 9. Dr. Livingstone.—Pale lilac, white centre, fine.
- 10. Duchess of Edinburgh.—Light rose.
- 11. Floribundum plenum.—Rosy pink, good habit.
- 12. Galopin.—Crimson, very fine.
- 13. Marquis of Salisbury.—Cherry rose.
- 14. Multiflorum.—Rose, orange centre.
- 15. Nancy. -- White, sulphur centre.
- 16. Niveum plenum. -- Pure white.
- 17. Panorama.—Sulphur.
- 18. Prince Teck.—Brilliant crimson, orauge centre, large,

SINGLE VARIETIES.

- 19. Abatos.—Delicate pink.
- 20. Abellus. -- White.
- 21. Belama. -- Bright red.
- 22. Coccinea. -Rich red-purple, fine.
- 23. Democrates.—Purple-red.
- 24. Eldorada. -Rose-lilac, striped white.
- 25. Grandiflorum.—Rose-carmine, large.
- 26. Hamlet. -Rich pink.
- 27. Hector. White.
- 28. Idmon.—Carmine.
- 29. Leopold.—Bright crimson.
- 30. Sherlock.—Crimson-scarlet.

SNAPDRAGON.

(Antirrhinum.)

This well-known plant, since its introduction into this country from the shores of the Mediterranean, has been greatly improved. It is a very attractive and easily-managed plant, doing well in any kind of fairly good soil and open situation.

Propagation.—Plants of the antirrhinum may be raised from seed and enttings. The seed should be sown in a shallow pan or box, filled to within an inch of the top with light sandy soil, either in August or early spring. The soil should be pressed level and the seeds distributed thinly over the surface, covering lightly with fine soil, pressed firm with the bottom of a flower-pot saucer or narrow strip of board, then sprinkled over through a fine-rosed watering-pot, and the pan or box put in a frame placed on a hot-bed, cucumber or melon frame; or, failing these accommodations, plants may be raised in the same manner recommended for raising celery plants. The frames being kept close and moist, the young plants will soon appear; they should, when large enough to handle, be pricked off into pans or boxes and wintered in a frame or greenhouse, giving plenty of fresh air on all favourable occasions to ensure a sturdy growth in the plants. If plants are raised from seed sown in spring they should be planted out before they touch in the pans or boxes into which the seedlings were pricked off. Cuttings of young growths, a couple of inches long, should be taken off the plants close to the ground in July or August, and be inserted round the edges of well-drained pots filled with the description of soil indicated above, with a little sand on the top, watered, and stood under a hand-light in a sunny situation, and kept close and shaded

from bright sunshine during the heat of the day until they have emitted roots. They should then be potted off singly into 3-in. pots, watered to settle the soil, and then placed in a cold frame near to the glass for the winter and early spring months.

Planting out.—The end of March or early in April, according to the character of the weather and the climate, is a good time to set out the plants. The antirrhinum is very effective when planted in masses, several varieties being planted together in one bed, the tall-growing ones in the middle and the dwarf ones outside, giving the plants a distance of from 15 in. to 18 in. every way from one another, and making the soil firm about the roots in planting. The antirrhinum also produces a good effect planted either in straight rows in herbaceous horders or irregularly; give water to settle the soil about the roots until the plants become well established. If the ground is naturally stiff a little leaf-soil, wood-ashes, or road-sweepings might with advantage to the plants be forked into the ground before planting time arrives. A surface-dressing of short manure or leaf-mould laid on between the plants immediately after being planted will greatly benefit them, as well as economise labour in the matter of watering at the roots. When the plants are in flower any good variety that may be desirable to preserve should be marked for propagation by cuttings. A few pods of seed should be allowed to ripen on extra good varieties to raise seedlings from. In this way the supply of good flowers may be obtained up to a late period of the year. The best varieties to grow are :---

- 1. Improved Tom Thumb.—Habit robust, and the brilliant flowers are borne profusely through a long period.
 - 2. Admiration.—Bronze and yellow striped.
- 3. Yellow Prince. -Soft yellow flowers, produced in great abundance; habit dwarf and compact.
- 4. White-throated is a beautiful class, including a great variety of showy colours.
 - 5. De Foe. -- Dark crimson self, tinged with purple.
 - 6. Painted Lady.—White, mottled with rosy crimson.

THE SWEET-WILLIAM.

(Dianthus barbatus.)

This old-fashioned inhabitant of cottage and other gardens is of very easy culture. It may be raised from seed sown in a somewhat shady spot out-of-doors in a light, sandy soil in April, to secure strong plants for transplanting in July, choosing showery weather for doing the work. The sweet-william may also be propagated by means of cuttings and

layers, in the same way as recommended for carnations, in July or early in August. Like most other flowers of this class, the sweet-william has undergone a change for the better at the hands of the florists within the last fifteen or twenty years.

Soil.—The sweet-william will do well in any ordinarily good soil. If planted out in rows, a space of from 12 in. to 15 in. (according to the size of the plants and the nature of the ground) should be allowed between the plants, making the soil moderately firm about the roots in planting and giving water to settle the soil.

THE VIOLET.

(Viola odoratissima.)

IT would appear from Tennyson's line-

" Thick by ashen roots the violet grows,"

that the violet was a shade-loving plant, and flourished especially under the shadow of the ash. This, however, is not the case, as conclusively proved by the profusion of flowers supplied by **Marie Louise**, the **Neapolitan**, and other varieties planted at the foot of sunny walls and fences, as compared with plants growing in the shade of trees, &c.

Although the violet has always been a favourite flower in England, there is very little, if any, popular tradition connected with it. As an emblem of constancy it has been esteemed in France from a very early period—and this signification may perhaps have had something to do with its adoption by the expectant Buonapartists—and it is stated to have been the prize bestowed upon the troubadour in olden times, and to have been subsequently replaced by its representative in gold. A golden violet was the prize instituted by Clemence Isaure at the floral games established at Toulouse early in the fourteenth century, which have been kept up, with occasional interruptions, to the present day. Yet further back, Athens was noted for its love of violets, and the term "Violet-crowned Athens" is said to occur more than once in classical anthors. And though the violet is not mentioned in Holy Writ, its odour is spken of in the Koran as "excellent above all other odours: it is as warmth in winter, and coolness in midsummer."

Byron, in his poem, "Napoleon's Farewell to France," makes the following allusion to the violet:—

"Farewell to thee, France; but when liberty rallies Once more in thy regions, remember me then. The violet shall grow in the depths of thy valleys; Though withered, thy tears will unfold it again."

We are told, when Buonaparte was finally conveyed to St. Helena, that he gave a violet to an English naval officer who accompanied him —an intimation, it may be, of his hope (which was never realised) of a speedy return. The revival, in a greater force than ever in connection with the late Emperor, as manifested at his funeral and at the mausoleum at Chislehurst, which is sometimes nearly hidden by violets, is, no doubt, chiefly due to tradition. Its popularity, however, was, says Mr. James Britten, probably enhanced by an incident which happened at the time the late Emperor escaped from the fortress of Ham. A packet of violet plants having arrived by diligence, the keeper was directed by Dr. Conneau to plant them in pots, and while his attention was thus occupied the escape was effected.

It is stated that the annual sale of violets in Paris exceeds 6,000,000 bunches, realising a sum exceeding £24,000.

Although the violet will grow and flower more or less satisfactorily in any kind of soil and situation, it amply repays for generous treatment. If given a light, rich, loamy soil, and a situation having a south, west, or even an easterly aspect, and treated in the simple manner described below, the plant will yield a profusion of large, well-formed flowers of a deeper blue and more deliciously-scented blossoms than would be obtained from ordinarily grown violets. The supply of flowers may be considerably extended by setting out plants in situations varying in aspect. In May, as soon as the early flowering plants, which will be those planted at the foot of a wall or fence having a south aspect, are gone out of flower, take them up and pull them to pieces, selecting the strongest of the individual plants and those having the plumpest crowns for planting in the same positions (if fresh ones are not available) as they occupied before, first forking into the ground a sprinkling of short manure. Many of the divided plants will have only a few hits of roots attached; these, as well as those plants having tufts of roots adhering, should be shortened back to within 1 in. or so of their bases before being planted. Two rows of plants at 9 in. asunder and at the same distance from plant to plant (set diagonally) in the rows, will be ample space for plants being planted at the foot of walls or fences. If planted in borders, either for lifting towards the end of September for transplanting in pits or frames for winter blooming, or for blooming in that position, 15 in. should be given between the plants every way. In planting, press the soil firmly about the plants, and do not bury them any deeper in the soil than they were before, giving water to settle the soil about them. In the absence of rain, water the plants every afternoon until they have taken to the soil; this more with a view to freshening up the plants than moistening the soil about the roots. When the plants have started well into growth the runners, which are freely produced, should be thinned out to four or five of the strongest and those having the most solid crowns, and the points pinched out, and all he other runners cut out as soon as they appear, the object in view

being to concentrate the sap into those left, from whence eventually the flowers proceed. A portion of the plants thus prepared may, where accommodation is at hand, be potted into 6-in. and 7-in. pots, using au admixture of good friable loam (where obtainable) and decomposed manure and leaf-mould, in the proportion of four-parts loam to one of the other named two ingredients. In potting let the young crowns be placed regularly round the edge of the pots, and the soil pressed firmly together and watered, afterwards standing the pots in the shade until the plants have re-established themselves, when they should have all the sun possible, or the plants may be placed in a frame or pit at once, and shaded from bright sun for a few days. Plants in pots are handy for blooming in greenhouse, rooms, or windows, in winter and spring, but for yielding good supplies of bloom for picking for the grower's own use or marketing, or both, the best returns are obtained from plants planted in watertight pits or frames in situations well exposed to the south and west, so that every ray of sun may reach the plants during the winter and early spring months. If a brick pit about $3\frac{1}{3}$ ft. deep at back and a foot less in front is used, it should be filled up to within 12 in. of the glass with a mixture of hot dung and leaves (about two-parts of the former to three of the latter), which had been turned over a few times previously to allow of the rank steam escaping from it, treading it well together before covering it with a layer of rich, light soil to the thickness of 6 in. or 7 iu. By the time this has been in the pit a week it will probably have subsided 3 or 4 in.; the plants may then be taken up with nice balls of earth adhering to the roots and be planted in rows about one foot apart in the clear, allowing the same space between the plants in the rows, making the soil firm about the roots, and then giving sufficient water to settle the soil, and shading lightly from bright sun for a few days; afterwards give plenty of air on all favourable occasions, drawing the sashes off for a few hours whenever the weather permits of this being done during the interval from planting until the following April, to get the foliage and flower-buds dry, as damp is the greatest enemy the cultivator has to cope with in the culture of violets during the period indicated. Keep all runners showing from the time the plants are potted up or planted in pits and frames persistently picked off as soon as they appear, also decayed or damaged leaves, protecting from frost by coverings of fern or whatever litter or protecting material may be most convenient. When the soil gets dry give a good watering of tepid water, choosing a bright morning for doing so, to enable the leaves to get dry before dark.

Varieties.—Belle de Chatenay and Comte Brazza, the former white, marbled purple, and the latter pure white, give delicacy of colour in addition to fragrance; Marie Louise, shaded purple, a good hardy and very free-flowering variety; Neapolitan, lavender blue, and The Czar,

dark-purple; Princess of Wales, and Princess Beatrice, Wellsiania, and California, four large-flowering single varieties, having stems 6 to 10 in. in length, and dark-purple flowers.

BULBOUS AND TUBEROUS-ROOTED PLANTS.

THE ANEMONE.

(Anemone coronaria.)

THE anemone is associated with our earliest recollections of garden flowers, the ereet spikes terminating with large flowers of bright and soft shades of colour, showing off to great advantage above the dark and



DOUBLE FRENCH "EMONE.

pale green, finely divided, and handsome later a favourable impression in the minds of all who see them in early spring. The

garden varieties have mostly been obtained from A. coronaria (wind flower).

Soil.—A light, rich, sandy soil, resting on a gravelly subsoil, will suit the requirements of the anemone admirably. The tubers may be planted at any time from October to January, weather permitting, but the earlier the operation is performed in autumn, the more likely are the results to be satisfactory. They may be planted in circular and oblong beds or borders; so planted, the colours well-mixed, and the beds pretty full in the middle, the effect thereby produced is very telling when the plants are in full flower. Before planting, make the surface of the beds level with the rake; set the roots 6 in. or 7 in. apart every way, burying them about 2 in. in the ground with a garden trowel, keeping the crown of the roots upwards, as a matter



Fig. 49.

SINGLE FRENCH GIANT POPPY ANEMONE.

of course; then cover the beds with 2 in. deep of leaf-mould, or a less thickness of sifted coal-ashes, if more easily procured, will answer the

same purpose, namely, that of preventing frost penetrating to the roots, as well as preserving the roots in a more equable condition during the winter months than would otherwise be the case. If the production of large well-developed flowers are aimed at, the flower-buds should be thinned out as soon as they appear. The roots planted in October flower towards the end of April and throughout the following month, and those planted in January in June.

Taking up and Storing.—In order to fill the beds with summer and early autumn-flowering plants after the anemones are gone out of flower, the roots must be either taken up as soon as the foliage has withered and be stored away in sand in a cool, dry situation, or be deeply planted in the ground in the first instance. The anemone may be increased by division of the roots, or by seeds sown thinly in sandy soil in spring and then covered lightly.

The following are a few of the best varieties to grow:-

Double French Anemone.

- 1. Bon Bleu.—Blue, very fine form.
- 2. Glorie de Nantes.—Chrysanthemum flowered, bluish violet.
- 3. Granville.—Pinkish rose.
- 4. Mauve Clair.—Chrysanthemum-flowered, pale mauve.
- 5. Ponceau.—Chrysanthemum-flowered, deep scarlet.
- 6. Rosy Queen. -- Pale rose, a very fine variety.

Among other varieties the single French anemone, Appenina (the blue wood anemone), referred to elsewhere, and Fulgens (a dazzling scarlet) may be mentioned as also being very desirable and showy varieties to cultivate.

THE CROCUS.

In the crocus we have many rich shades of yellow, purple, and blue, as well as striped varieties, which brighten our front gardens soon after the winter snows have taken their departure. In planting crocuses it is best to plant them about 9 in. deep, so that surface-dressings of short manure can annually be forked into the ground without disturbing the bulbs, and at the same time saving labour by rendering the taking up and re-planting of the bulbs every year quite unnecessary.

The following are a few of the many good varieties in cultivation, and which are characterised by large, distinct, and well-formed flowers:—

- 1. Albion .-- White and dark violet striped, large.
- 2. David Rizzio.—Dark purple, large.
- 3. Golden Yellow.—Large and fine form; good for pots.
- 4. La Majestueuse. -- Violet striped, very fine and early.

- 5. Ne Plus Ultra.—Blue, margined with white.
- 6. Prince Albert.—Dark blue, large.
- 7. Queen Victoria. Pure white, very large flowers.
- 8, Sir Walter Scott.—Violet and white striped, purple base.

THE CROWN IMPERIAL.

(Fritillaria imperialis.)

This stately, well-known, bulbous, spring-flowering plant sends up strong stems, and uearly at the top produce a crown of drooping, bell-shaped flowers, surmounted with a tuft of fresh green leaves. There are many



CROWN IMPERIAL.

species of fritillaria, but the crown imperial is the best and most showy of them all. They will grow in any ordinary soil and situation, being especially adapted for planting in shrubbery borders, where the bulbs are not likely to be disturbed. Of course. they do better in light, rich, open soil than they would in ground of an opposite description. They should be planted 3 or 4 in. deep. Single bulbs potted into 6-in. pots show off to advantage in a greenhouse or conservatory. For this purpose a mixture of three-parts good sandy loam and one of leaf-mould and short manure, well mixed, will suit their requirements admirably.

The following varieties may be relied upon:-

- 1. Aurora.—Red.
- 2. Crown on Crown.—Several whorls of flowers, one above the other.
- 3. Lord Derby.—Straw colour, shaded black, a very fine and distinct variety.
 - 4. Lutea.—Single yellow.
 - 5. L. flore pleno.—Double yellow.
 - 6. Maxima rubra.—Red, large, early.

DAFFODILS, or NARCISSUS.

Perhaps there is no better known or more generally cultivated bulbous plant than the homely daffodil. Thanks to skill, energy, and time devoted to the culture and improvement of the old varieties of the daffodil

by the trade generally, we now have several classes and numerous excellent varieties of each section of the "golden flower" of great size, substance, and diversity of form to adorn our front gardens, shrubbery borders and orchards, during the spring months.

The following selection of twelve may be relied upon as representing a few of the best varieties of each section :—

- 1. Bicolor Empress.—One of the largest and noblest of all daffodils; immense, well-displayed, rich golden yellow trumpet, with broad white perianth of good substance, bolder and finer than Horsfieldii, grand form.
- 2. Bicolor Horsfieldii (king of the daffodils).—A splendid, large, free-flowering, early variety, immense golden yellow trumpet, with white perianth, one of the finest and most stately of this section.
- 3. Bicolor Lorifolius Emperor.—The most noble and striking daffodil in cultivation, of immense size and great substance, trumpet clear golden yellow, with broad, stout, delicate primrose-coloured perianth, a most beautiful and desirable variety, and should be in every collection.
- 4. Bulbocodium conspicuous (yellow hoop petticoat).—A very pretty, distinct, and free-flowering dwarf species, flowers of a rich golden yellow, very suitable for pots or edgings to beds or shrubbery borders.
- 5. B. monophyllus (white hoop petticoat).—Very pretty, small, eucharis-like, pure white flowers; should be grown in a cool frame, and it will commence blooming in January.
- 6. Cernus Plenus.—An extremely beautiful and scarce variety, bearing full double flowers of a delicate creamy white colour, sometimes tinged with pale lemon in the centre.
- 7. Incomparabilis Aurantius plenus (butter and eggs—double incomparable).—Large double yellow, interspersed with deep yellow ogments, effective and free flowering.
- 8. I. albus plenus aurantius (eggs and bacon—orange phœnix).—Very beautiful, large double white flowers, interspersed with rich orange-scarlet segments in the centre, which forms a striking contrast, and renders the flowers very attractive.
- 9. Major.—Large, bright golden yellow, early, very effective and useful for cutting.
- 10. Poeticus ornatus.—Finest of the early flowering varieties, broad, pure white perianth, with red crowns, flowers large and well-shaped; a very beautiful and useful variety.
- 11. Poeticus plenus (double white or gardenia flowered uarcissus).—Fine, pale, double, pure white flowers, in purity and sweetness rivalling even the flowers of the gardenia.

12. Poeticus recurvus (pheasant's eye, or poet's narcissus).—Pure white, with red crown, very fragrant, and very useful for cutting.

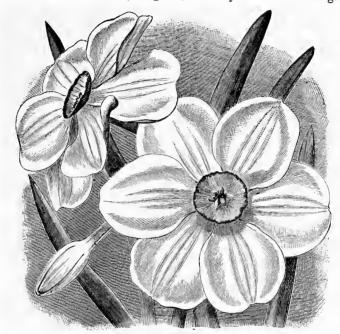


Fig. 51.-POETICUS ORNATUS NARCISSUS.

THE DAHLIA.

(Dahlia variablis.)

This favourite flower was introduced into England in 1789 by the Marchioness of Bute, who brought it from Spain. It is a native of Mexico. There have been great improvements and extensions of varieties of the dahlia made in recent years by our famous growers. Single (including the Tom Thumb section recently raised by the late Mr. T. W. Girdlestone) cactus varieties of great beauty, diversity, and richness of colour have been added to the already long list of double varieties, which they have in a great measure supplanted in public esteem. They are all of very easy culture, and grow freely in any kind of soil, inclining to be light rather than heavy. If, however, the natural soil be heavy, leaf-soil, road-sweepings, and such-like should be added to lighten it. The dahlia is easily propagated by dividing the roots, seeds, and cuttings. The latter mode is the one generally adopted.

In spring the roots are placed closely together on a hot-bed with a little light mould placed around and amongst them, and as soon as they have made shoots about 2 in. long they should be taken off, either with or without a slight piece of the tuber attached, and inserted singly in small pots, watered, and then plunged in a hot-bed; or, if only a few plants are required, in a few inches of sawdust placed in a hand-light somewhere in heat. When the plants are rooted they should be gradually hardened off, and finally be planted out early in June. If in rows, a space of from 5 to 6 ft. should be allowed, putting a stake to each plant for support. Where very fine flowers are aimed at, all superfluous side shoots are thinned out and the remaining ones staked, the flower-buds being also thinned.

Insect Attacks.—Earwigs sometimes prove troublesome and destructive to blooms by devouring the florets. A flower-pot half filled with moss or a bean-stalk placed among the plants will effectively trap them. The traps should be examined every morning, and the depredators destroyed.

Among the best of the recently raised varieties are :-

SHOW VARIETIES.

- 1. Alice Emily.—Delicate buff yellow, a brighter and purer yellow at the edge, and of fine form.
- 2. Clara.—Rosy peach, a large, constant flower of beautiful petal and outline.
- 3. Crimson King.—Deep crimson, a good early variety, very constant.
- 4. Delight.—Creamy white, slightly edged with purple, a neat, compact flower.
 - 5. Earl of Radnor.—Magnificent plum, intense colour.
- 6. H. W. Ward.—Yellow ground, heavily edged, and shaded with deep crimson.
- 7. Imperial.—Deep purple, with pretty shade of lilac, large, and of splendid form.
- 8. Mrs. John Laing.—French white, of excellent form and very free flowering.
- 9. Mrs. Langtry.—Cream colour, beautifully edged with crimson, a splendid flower.
 - 10. Mrs. Shirley Hibberd.—Cream colour, shaded with pink.
- 11. Reliance.—Fawn colour, very prettily shaded with rose, fine form.
- 12. Walter H. Williams.—A splendid, bright scarlet, surpassing all others of that colour.

FANCY VARIETIES.

- 13. A. F. Barron. -- White, striped with lilac.
- 14. Alderman.—Lilac, heavily striped and spotted with purple.
- 15. Comedian.—Orange ground, beautifully flaked and speckled with crimson, and tipped white.
- 16. Dandy.-Orange, beautifully striped with crimson, large, handsome flower.
- 17. Duchess of Albany.—Pale orange, striped with crimson, full and constant.
- 18. Edmond Boston.—Orange, heavily striped with crimson, a fine fancy.
 - 19. Enchantress.—Creamy white, striped with rosy purple.
- 20. Fanny Sturt.—Red, tipped white, exquisite form and very constant.
 - 21. Flora Wyatt.--Fawn colour, flaked red, sometimes pure orange.
- 22. Frank Pearce.—Rose, attractively striped with crimson, splendid form.
 - 23. Frederick Smith.—Deep lilac, striped with purple.
- 24. Gaiety.—Yellow, striped with red, and distinctly tipped white; a grand flower, the most attractive ever sent out.

SINGLE VARIETIES.

- 25. Acquisition.—Crimson, with scarlet band at the end of each petal.
 - 26. Alba Simplex.—Pure white.
 - 27. Bertha.—Purplish lilac.
 - 28. Canterbury Tales.—Deep rose or magenta.
 - 29. Cetewayo.—Rich dark maroon.
 - 30. Chilwell Beauty.—Red, with yellow stripe on each petal.
 - 31. Defiance.—Deep scarlet.
 - 32. Evening Star.—Rich crimson maroon.
 - 33. Flavius.—Good dwarf yellow.
 - 34. Grandee.—Large, rich purple.
 - 35. Hero.—Creamy white, shading to a deep sulphur in the centre.
- 36. Paragon.—Rich dark maroon, with a shade of purple round edge of each petal.

CACTUS VARIETIES.

37. Countess of Lonsdale.—An exquisite shade of rich salmon, with just a suspicion of apricot at the base of the petals. Towards the tips the colour deepens gradually into the softest of carmine pinks,

producing, as a whole, one of the most delightful combinations of tints imaginable. The shape of petals and of the whole flower, combined

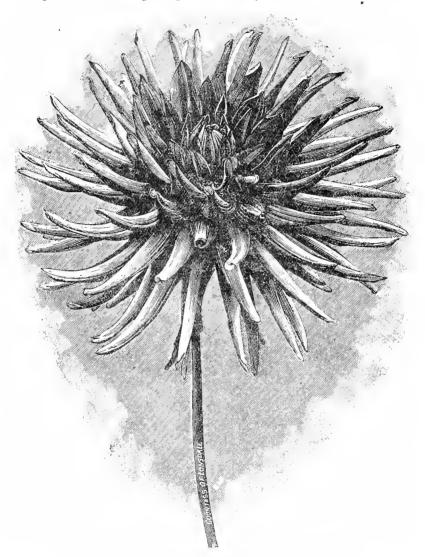


Fig. 52.—CACTUS DAHLIA.—COUNTESS OF LONSDALE.

with the freedom of flowering, faultless form, pleasing colour, and length of stem, leaves absolutely nothing to be desired.

38. Constance.—White; useful to cut for decoration,

- 39. Juarezii.—Rich crimson, a useful and popular variety, much resembling the cactus in shape.
 - 40. Miss Barry.—Rich purple, very profuse flowering.
 - 41. Mr. H. Cannell.—Rich velvety crimson, tinted purple at points.
 - 42. Mrs. Douglas.—A bright pinkish salmon, very distinct in colour.
- 43. Mrs. G. Reid.—Pure white, conspicuously edged with lake, very distinct
 - 44. Mrs. Hawkins.-Clear sulphur yellow, shading to delicate pink.
 - 45. Mrs. Tait.—Large, white, with serrated petals, very useful.
- 46. Panthea.—Reddish salmon, with long, graceful petals, of the type of Juarezii.
 - 47. Robert Mayher.—Amber yellow.
 - 48. The Shah. -- A pretty shade of salmon, free and distinct.

POMPONE VARIETIES.

- 49. Achilles (new).—Pale lilac, well-formed flower, very free.
- 50. Admiration.—Crimson, with scarlet band at the edge of each petal.
 - 51. Ariel.—Orange buff, good outline, very pretty and free.
 - 52. Brunette.—Red, often blotched and tipped with white.
 - 53. Catherine.—Yellow, a neat flower.
 - 54. Cupid. White ground, tipped and suffused with rose.
 - 55. Dandy.—Crimson purple, small and pretty.
 - 56. Darkness.—Blackish crimson, one of the best.
 - 57. Dora.—White, shaded with cream, pretty and attractive.
- 58. Eden,—Deep shaded crimson, a small, compact well-formed flower.
 - 59. Fashion.—Light orange, very profuse flowering.
 - 60. Gem.—Intense rich scarlet, of the finest form, free and erect.

Tom Thumb Single Varieties. (From 9 in. to 22 in. high.)

- 61. Bantam.-Very handsome dark scarlet.
- 62. Bootles.—Rich velvety red.
- 63. Bo-Peep.—Very free-blooming maroon self, dark round disc.
- 64. Hoop-la.—Very perfect circular flower, rich velvety maroon self, clear yellow ring round disc.
 - 65. Liliput.—Light scarlet, lined orange, very bright green foliage.
 - 66. Maud.—Extremely rich velvety dark scarlet.
- 67. Midget.—Erect flowers, colour pure hright scarlet, bright green glossy leaves.

- 68. Mignon.—Bright, clear pink, white ring round disc.
- 69. Miniature.—Clear bright yellow.
- 70. Miss Grace.—Light orange, very effective.
- 71. Pearl.—Handsome, well-formed flower, colour deep manve.
- 72. Tom Tit.—Clear orange scarlet, distinct and telling, light yellow round disc.

THE FREESIA.

The freesia is among the most beautiful of all Cape bulbs, and flowers freely under the same cultural treatment bestowed on the hyacinth, as described under that heading; four or five bulbs placed in 3-in. pots producing as many spikes from 9 to 12 in. high, and having six to eight tubular-shaped, deliciously-scented white flowers each, are most



Fig. 53.
FREESIA REFRACTA ALBA.

- desirable and lovely subjects for house or room decoration, one plant being sufficient to perfume a good-sized house. The freesia is, therefore, a most suitable room or house plant when properly grown. There

should be no "coddling" of the plants. This has more to do with the unsatisfactory results and disappointments complained of by amateurs than any and most of the causes put together to which they attribute failure in the flowering of this and other equally free-flowering subjects. One of the cultural details necessary to success in the growth of plants of every description is to give them due time to perform the functions required in a satisfactory manner. The freesia force very easily, and may be had in flower from Christmas to June. The plants, however, must not be put into a high temperature immediately they are removed from their covering of ashes out-of-doors. They should be gradually inured to light and air, the forcing being gradually and gently performed in subjecting the plants to a higher temperature. After the flower-spikes appear, give diluted tepid liquid-manure at the roots two or three times a week, or alternately with clear water, or half a teaspoonful of guano or other artificial manure sprinkled over the soil, but keeping it clear of the stems and leaves, immediately before applying clear water at the roots, will answer the purpose just as well and better as regards its application to plants growing indoors, in rooms, and such-like places.

The following are the varieties cultivated in gardens:-

- 1. Leitchtlini.—Clear pale yellow, with bright orange blotch on the lowest petal; fragant.
- 2. Leitchtlini maxima.—A new seedling variety of large size, great beauty, and delicious fragrance, and of robust-branched habit and strong growth. The main flower-spike is furnished with numerous branchlets, and is terminated with a cluster of from nine to thirteen flowers, which are of a rich primrose-colour, with small orange blotch on the lower petal.
 - 3. Refracta alba.—White, with lemon blotch.

All the varieties of the freesia have their own distinct perfumes.

THE GLADIOLUS.

The tall, floriferous spikes of this bulbous plant are very telling, either planted in beds or in lines, or in groups of half-a-dozen irregularly in herbaceous or shrubbery borders. The Bride (Colvillii alba), pure white, when three bulbs are grown in a 4½-in. pot, makes a most useful decorative subject for intermixing with other plants in small greenhouses, &c.; and a few bulbs inserted early in March in window boxes amongst other plants render a good account of themselves during the summer and autumn months. The gladioli pays well for any extra attention given to it in the way of rich, sandy soil. Although planting may be done any time at short intervals between the end of February

and the middle of May for succession, March is the best time for planting. The corms should be planted about 3 in. deep and 1 ft. asunder. The spikes should be given support in due time, otherwise they will probably get broken by the wind. If the corms are not lifted in October when the leaves begin to fade, a covering of leaf-soil a few inches deep should be laid on as a protection from frost; but



Fig. 54.
GLADIOLUS COLVILLII ALBA.

it is better to take them up, spreading them out to dry in a shed or loft. After the stems have become pretty well dried they may be cut away close to the crown, and the bulbs stored away in paper bags, &c.

The following are good varieties;-

- 1. Cardinalis.—Fiery scarlet, with white stripe.
- 2. Colvillii.—Purplish lilac.
- 3. Fairy. White, lower petals beautifully blotched deep rosy crimson.
 - 4. Insignis.—Scarlet, tinged purple.
 - 5. Prince Albert. -- Rosy scarlet, blotched white.
 - 6. Colvillii Alba.--Pure white.

- 7. Queen Victoria.—Deep red, shaded scarlet, white blotch.
- 8. Rosea Maculatus.—Salmon scarlet, flakes white, with dark shading.
 - 9. Rosy Gem. -- Delicate pink, invaluable for cutting.

THE HYACINTH.

(Hyacinthus orientalis.)

This popular plant is a native of the Levant, and has long been cultivated in our gardens, its fine spikes of red, pink, white, rose, crimson, and various shades of blue flowers being always most welcome in spring. The hyacinth will do well in any description of soil, providing it is not stiff and is of average fertility and uniformly moist. October is the best month in the year for planting hyacinths, tulips, narcissus, and such-like. If the bulbs are deeply planted in the ground, say about 10 in., all the after attention necessary is to annually fork a dressing of short manure into the soil, and support the flower spikes by means of short sticks and matting, where necessary. deep planting, in addition to effecting a saving of labour-a point always deserving of consideration-also admits of summer flowering subjects being planted without in the least disturbing or interfering with the well-being of the bulbs underneath. Those wishing to give special attention to a bed or two of choice varieties, and whose soil in its natural state is not congenial to the requirements of the hyacinth and other bulbs named above, a situation well exposed to the south should be selected, and the soil to the depth of about 2 ft. removed, and replaced with light, rich, prepared soil, consisting of about three-parts good sandy loam and one of leaf-soil and short manure wellmixed. If the subsoil is gravelly or chalky, no artificial drainage will be necessary, but should it consist of clay, a few inches deep of brick rubble, clinkers, broken fairly fine on top, or coarse gravel should be put in as drainage. The beds, about 4 ft. wide, may be made a couple of inches higher than the level of the ground surrounding them. Plant the bulbs from 6 in. to 3 in. deep, according to their size and habit of growth, and from 8 in. to 10 in. asunder. In planting, make the holes with a blunt dibber, placing a little sand under and over each bulb in the holes thus made; all that is required after this is to lay on 2 in. thick of leaf-mould or tan on the approach of frost, as a protection to the bulbs during the winter.

Culture in Pots and Glasses.—This is a very simple matter. Select 4½ in. pots, place a large piece of crock over the hole in the bottom, and over this a handful of small pieces and a little moss or half-rotten

leaves as drainage. Then fill the pots to within 1 or 2 in. of the top with mould of the description indicated, and insert three bulbs of the Roman hyacinth in each, leaving the crown of the bulbs a little above the level of the soil, pressing the latter firmly about them in potting. One bulb of the other varieties of hyacinth will be enough in the size pot mentioned, or three bulbs may be put in a 6-in. pot. When the desired number of hyacinths, tulips, narcissus, jonquils, and freesias are potted, stand the pots closely together on a little sifted coal-ashes in a place out-of-doors where water is not likely to lodge, and then cover them with 4 or 5 in, deep of the same material with a like thickness round the sides and ends, patting the ashes gently with the back of the spade, so as to present a firm, close surface to the weather. A long label should be inserted in the first row of each kind or variety of bulb covered, as a guide to the cultivator as to the exact spot to uncover when the time for examining the hulbs arrives. The Roman hyacinths should be placed in the outside rows, as they will push into growth first. They should be examined towards the middle or end of November, and when they have pushed their spikes into about l in. of growth they should, like all the others similarly covered, be taken



Fig. 55.

ROMAN HYACINTHS.

out, removing the ashes carefully so as not to injure the flower-spikes; the pots should then be washed and stood near the glass in a warm greenhouse, vinery, or hot-water pit, and an inverted flowerpot should be placed over each pot of bulbs, so as to gradually inure the blanched growth to light and air as admitted through the hole in the bottom of the pot turned upside down. A few days later the pots should be tilted up a little with a piece of crock, removing it altogether a few days later, selecting a dull day to do so. Water should be given when the soil gets a little dry, increasing the supplies in proportion to growth and the temperature maintained in the structure in which the plants are growing;

giving weak liquid-manure, lukewarm, every alternate watering after the flower-spikes appear, will tend to the production of large spikes and finely developed pips.

Glass Culture.—Fill the glasses with rain water till the water touches the base of the bulbs—a few small pieces of charcoal previously placed in each glass will keep the water free from impurities—and then place in a dark closet for three or four weeks, by which time roots a few inches long will have pushed into the water, top growth following shortly after; then gradually inure to light.



Fig. 56.

HYACINTHUS CANDICANS.

The following six varieties may be accepted as representing the class of bulbs to grow either in pots or glasses :-

- 1. King of the Blues.—Dark blue. 4. Macaulay.—Red.
- 2. La Grandesse.—White.
- 3. Lord Derby.—Light blue. 6. Von Schiller.—Red.
- 5. Snowball.-White.

HYACINTHUS CANDICANS.

Is a grand hardy bulbous plant. Planted in a mixed bed or border in the manner advised for the hyaciuth, it will grow and flower freely, the tall spikes of drooping, bell-shaped, white flowers being very attractive as well as useful (see Fig. 55).

THE JONQUIL.

This delicate, fragrant, and pretty flower, though classed by itself in catalogues, is a small-flowered narcissus, and is exceedingly valuable for culture, but being perfectly bardy, may be planted in open beds and borders, and is very useful for cutting; the round, rush-like foliage is quite distinct from that of the narcissus major type. Four or five bulbs may be grown in a $4\frac{1}{2}$ -in. pot. The treatment is the same as that advised for hyacinths.



Fig. 57.
DOUBLE JONQUIL.

The following are the best varieties to grow:-

- 1. Campernelle.-Large yellow flowers.
- 2. Double.—Rich yellow, sweet scented.
- 3. Odorus regulosus.—Yellow.
- 4. Queen Anne's Double Jonquil (Narcissus odorus minor plenus).—One of the prettiest and most beautiful varieties, of bright golden yellow colour, perfectly double, elegant, and deliciously fragrant; excellent for pots.
 - 5. Single.—Sweet scented.
- 6. The Silver Jonquil (Narcissus Tenuior).—Silvery white, slender stems, very graceful.

THE PÆONY.

(Pæonia arborea.)

THERE are two distinct races of this very showy hardy plant in cultivation; the one known as the tree pacony is represented by **Paconia Moutan**, introduced from China in 1789, and by numerous varieties which have originated from it, and the herbaceous pacony (**P. officinalis**) and its numerous offsprings, the species having been introduced to this country in 1560.

The tree pæonies are robust, half-shrubby, open-branched, early spring-flowering plants, attaining to a height of from 5 to 6 ft., according to soil, situation, and climate. They succeed admirably in ordinary garden soil enriched with manure, and in a situation well exposed to the south or west. When the shoots and leaves are in a young state in spring they are the better for a slight protection from late frests. The pæony, with its greyish, rugged stem and immensely large, brilliant, and attractive-looking flowers, shows off to great advantage when planted singly on lawns or grass plots of less pretentious designation. They may also be grown in tubs and large pots in unfavourable districts, keeping them in sheltered corners until spring is well advanced, when the plants can with safety be transferred to the desired positions. There are various shades of colour, ranging between crimson and white.

The following selection includes the best varieties:-

1. Alba grandiflora.

2. Alba pleno.

- 3. Atropurpurea candidissima.
- 4. Carnea pleno.
- 5. Emperor of China.
- 6. Lactea.

- 7. Purpurea.
- 8. Rollissoni.
- 9. Rosa mundi.
- 10. Unicolor purpurea.
- 11. Versicolor pleno.
- 12. Violacea pleno.

The herbaceous pæonies supply us with many striking shades of colour, the large, globular flowers, surmounting the luxuriant, handsome, dark-green leaves, being tinted with crimson, pink, rose, white, and almost every hue of colour between white and crimson. The plants should be given prominent positions in shrubbery and herbaceous borders. They are also very effective planted in masses. They will grow in any kind of light, rich soil, and are increased by division of the roots.

The following selection includes the best varieties:-

- 1. Alba superba.
- 2. Amabilis plenissima.
- 3. Atrosanguinea.
- 4. Carnea maxima.
- 5. Centifolia rosea.
- 6. Glorie de Douai.

- 7. La Sublime.
- 8. Lilacina.
- 9. Prince Charles.
- 10. Pulcherrima.
- 11. Purpurea.
- 12. The Queen.

THE POLYANTHUS NARCISSUS.

THERE are a great many excellent varieties of this valuable and easily cultivated bulbous plant in cultivation at the present day. The flowers, varying in size and colour from pure white to deep golden yellow, are very fragrant. They are admirably adapted for forcing, especially the **Double Roman** and **Paper White**, which may be had in bloom at Christmas.

Of the general varieties, the following are some of the best:-

- 1. Bathurst.—Primrose, with deep-yellow cup, compact, dwarf habit.
- 2. Bazelman Major.—Pure white, with yellow cup, large bold flower, very sweet.
- 3. Early Double Roman.—White, with orange nectary; excellent for very early forcing.
 - 4. Early Paper White.—Pure white, early; capital for early forcing.
 - 5. Golden Era.—Yellow, with orange cup, large truss, very fine.
 - 6. Grand Monarque.—Pure white, with citron cup, fine large flower.
 - 7. Her Majesty.—Pure white, with yellow cup, new and very fine.
 - 8. Jaune Supréme.—Clear, yellow, large and fine.
 - 9. Lord Canning.—Yellow, with light orange cup, fine.
 - 10. Princess of Wales.—White, with orange cup, fine large truss.
 - 11. States General.—Creamy white, with yellow cap.
- 12. White Pearl.—Pure white, medium sized flowers, distinct and fine.

RANUNCULUS.

(Ranunculus asiaticus.)

This pretty plant is said to be a native of the Levant, and was cultivated by Gerarde in 1596. The plants are very floriferous, and the flowers—embracing the richest and most diversified shades of colour—



Fig. 58.

RANUNCULUS.

very beautiful. They are eminently decorative in spring for beds, masses, or clumps, in mixed or separate colours, and for cutting for

table decorations, vases, &c., are not easily surpassed. The ranunculus will grow admirably under the same treatment as detailed under the heading of "Anemone," and may be propagated in the same way as that flower. The Turban varieties are of hardier constitution and stronger growth than the Persian.

SCHIZOSTYLIS COCCINEA.

This South American subject, with the spikes of gladioli-like searlet flowers showing well above its dense, grass-like foliage, is at once a showy and very useful plant to grow, either for cutting from in October and the early part of November, or for potting up the end of August in $4\frac{1}{2}$ -in. and 6-in. pots for mixing with other plants—chrysanthemums and such-like—in cold or heated houses during the following three or four months. The plants, when well established, should be divided,



Fig. 59.
SCHIZOSTYLIS COCCINEA.

and the divisions planted in a mixture of light, loamy soil, leaf-mould, and short manure, in a border having a south or west aspect, allowing a clear space of from 16 in. to 20 in. between the plants, and keeping them free from weeds and well supplied with water at the roots during the growing period in dry weather.

SCILLAS.

THESE charming spring-flowering bulbous plants are not grown so extensively as they undoubtedly deserve to be. They will flourish

under the same treatment given to snowdrops and crocuses, and, like them, they are most suitable subjects for edging beds or borders with,



Fig. 60.
SCILLA SIBERICA.

as well as for pot culture; the colours range from pure white to deep blue. The best as well as the most telling variety to grow is **S. Siberica**—a beautiful bright blue, and a profuse flowerer (see Fig. 59).

THE SNOWDROP.

(Galanthus nivalis.)

This familiar earliest of all spring-flowering plants requires no description here, further than saying that the bulbs may be planted in the same manner recommended for crocuses, and that used either in rows on either side the flint edgings to shrubbery walks, or planted in clumps here and there among the trees and shrubs where they can be seen from the walks, the effect thus produced in spring is very telling. In the shrubbery grounds at Longford Castle this harbinger of spring (both double and single varieties) is planted in the manner described, the curving lines of white extending about three miles in the aggregate. Blue-bells and primroses may be planted in the same way with good effect.

THE TUBEROSE.

(Polyanthes tuberosa.)

THERE are double and single varieties of this, and both are much prized on account of their fragrance and pearly whiteness. The double

variety, however, is the best to grow. In potting, rub all the bulblets off the sides of the tubers, and bury them three parts in the rich, loamy soil, putting one tuber in each 3-in. pot. which should be plunged to the rim in a hot-bed, keeping the soil fairly dry until growth begins, when it should be kept uniformly moist. Keep all suckers persistently rubbed off as they appear, to throw strength into the central shoot, and thereby promote the production of good flower-spikes. When the latter are about 8 in. high, shift into $4\frac{1}{9}$ -in, and 6-in, pots; keep close and moist until the flowers begin to open, syringing the leaves to keep red spider from attacking them. When the pots are pretty full of roots, doses of weak liquid - manure will prove beneficial. The Pearl, a double dwarf American variety, is the best to grow.



Fig. 61.—DOUBLE TUBEROSE.

THE TULIP.

(Tulipa gesneriana.)

This showy plant has long been a denizen of our gardens, having been introduced into Britain about the year 1577. It is a native of the Levant, and it is said that its culture soon afterwards was pursued so energetically, both in this country and in Holland, and the rage for tulips spread to such an extent, that in 1809 a single bulb of one variety sold at £300, and another for £100; and in 1818 one sort was quoted at £500. As late as 1854, too, there were catalogued the names of three varieties, the price of which was 100 guineas each. The cultural treatment of the tulip being the same as that described for the hyacinth, it need not be again detailed here. The white and yellow Pottebakker varieties are very effective for pot culture; the flowers are single.

The following early-flowering single varieties for planting in beds and borders include the best in cultivation:—

- 1. Arms of Levden. Fine, large white, tinted with pale rose.
- 2. Artus.—Searlet, fine bold flower.
- 3. Bacchus. Rich dark crimson, dwarf habit.
- 4. Bride of Haarlem.-White, striped and feathered with erimson.
- 5. Brutus. Bright orange crimson, with small golden margin.
- 6. Cerise Grisdelin.—Purplish rose, margined with creamy white.
- 7. Comte de Mirabeau.—White.
- 8. Cottage Maid.—Rose pink, shaded white, pretty.
- 9. Couleur ponceau.—Rosy erimson and white.
- 10. Couronne pourpre.—Beautiful shade of rosy purple.
- 11. Crimson King.—Scarlet erimson.
- 12. Royal Standard. White, feathered with rosy crimson, very fine.

DOUBLE VARIETIES.

- 13. Alba maxima.—Pure white.
- 14. Couronne des Roses. Creamy white and rose.
- 15. Duc Van Thol.—Red and yellow, beautiful.
- 16. Duke of York.—Bronze crimson, margined with white.
- 17. Gloria Solis. Rich deep red, with orange border.
- 18. Imperator rubrorum.—Bright dazzling scarlet.
- 19. La Candeur. Clear white, large and fine.
- 20. Murillo.—Fine blush white, very pretty and distinct.
- 21. Purple Crown.—Deep purplish maroon.
- 22. Rex rubrorum.—Bright searlet, very fine.
- 23. Rozen Kroon. -- Rosy carmine.
- 24. Tournesol.—Bright golden yellow.

STORING BULBS, &c.

Bulbs which are taken up every year as soon as they are done flowering in spring—that is, in time to fill the beds and borders which they made gay during the months of March, April, and the early part of May with summer flowering plants—may be stored in pots or boxes filled with dry sand, leaf-mould, or sawdust, until required for replanting in the same or other beds after "Jack Frost" has rendered the removal of the summer flowers necessary. Liliums are best wintered in their flowering pots in a cool house or pit, covering them with fern or straw, in the event of severe frost, to prevent the bulbs being frozen. Tuberous rooted begonias may be wintered in the same way, storing begonias which have been bedded out away in boxes, about 2½ ft. long, 9 in. wide, and 5 in. deep, in light mould, the same as geraniums,

and putting them in any convenient place out of the reach of frost; failing a better, a cellar or shed will do. Dahlias should he stored in boxes filled with sand and kept in the dry during the winter. Fuchsias may be wintered in any shed from which frost can be kept out, as also may geraniums, withholding water gradually from the roots, but in the case of the latter plants excessive moisture should also be guarded against, otherwise the plants would suffer from damp. I merely give the dimensions of boxes in case they may bave to be made for the purpose, as it is more convenient to have boxes of uniform size. Apart from this, any odd shallow boxes that may be at hand may be utilised for the purpose indicated.

SUMMER BEDDING PLANTS.

THE ordinary plants for making a display in flower gardens and beds on lawns are scarlet, pink, and white geraniums (pelargoniums). together with the tricolor and bicolor sections of those popular bedding plants, yellow calceolaria, verbenas, blue lobelia, ageratum (mauve colour), and heliotrope. Henrie Jacoby and Tom Thumb are the best scarlet pelargoniums, Christine and Helen Lindsey are the best pinks, and Virgo Marie, Madame Vaucher, and Niphetos, the best whiteflowered varieties; Robert Fish is a good golden bronze (bicolor), and the popular Mrs. Pollock is a good tricolor. Bijou and Manglesi are good silvery foliaged pelargoniums; the former has scarlet and the latter pink flowers. The cuttings of pelargoniums may be taken off any time during the month of August (the earlier the better), and inserted 2 or 3 in, apart in pots or boxes, about 30 in, long, 9 in, wide, and 4 in, deep, properly drained and filled with any kind of light soil, with a little sand on top. In the process of putting in the cuttings a little of the sand works into the holes round the base of the cuttings, and thereby hastens the emission of roots. Then water through a fine rose and stand in the blaze of the sun, damping them slightly overhead in the afternoon, as much with a view to freshening up the cuttings as moistening the soil about them. The young plants should be removed. to a place out of the reach of frost and excessive damp towards the end of September, before they get injured by frost. Verbenas and heliotrope I have seen strike freely enough treated as described above, ninety miles north of Edinburgh. But at the same time they, together with salvia patens (blue salvia) and lobelia, are hest put into pans and then placed in a frame, and kept close till rooted, afterwards giving them abundance of air in favourable weather. All the above-mentioned subjects may be struck in a hot-bed in spring (see "Hot-beds-how TO MAKE AND USE THEM"). Calceolarias are best struck in a cold

frame, placed in a sunny aspect and on a hard bottom, first placing about 2 in. of short dung over the gravel or coal ashes, following that with 3 in, thick of good soil and a surfacing of sand. Choose shortiointed, sturdy cuttings-these remarks apply equally to all kinds of cuttings-remove the bottom pair of leaves with a sharp knife, cutting them off nearly close to the stems. This done, insert them about 4 in. asunder every way in the prepared soil, making it firm about each cutting, watering through a rosed water-can to settle the soil, afterwards keeping the frame close and shaded from bright suu for a few hours during the heat of the day until the cuttings have taken root. when the shading should be dispensed with, and abundance of air should be given every favourable opportunity that presents itself during the winter and early spring months, the object being to prevent the young plants making growth during the interval, and to keep them sturdy. The cuttings should be put in before they get injured by early autumn frost. say from the middle to the end of September. They may be either planted out temporarily, 6 in. apart, where they can be protected from frost, or in the beds or borders before they become crowded in spring. Floriabunda is a good all-round shrubby variety to grow, the flowers being of a golden yellow colour; C. amphlexicaulis, of straggling habit, produces large trusses of beautiful straw or lemoncoloured flowers. The plants will lift with nice balls of soil and manure attached, and therefore will experience little, if any, check in being transplanted, the soil being made firm about them and water given to settle it about the plants.

SWEET PEA.

(Lathyrus Odoratus.)

During the last ten or twelve years numerous beautiful varieties of this popular and useful annual have been raised by intercrossing the flowers of previously obtained improvements on the sweet pea of our earliest recollection. The flowers of the present day **Lathyrus Odoratus** are large, and range in point of colour pretty well in every shade between pure white and crimson, and the flowers, being borne on long, stoutish stems, lend themselves admirably to the embellishment of rooms, a dozen or so of flowers arranged somewhat loosely and irregularly in small glasses being very effective when intermixed with some of its own foliage or light grasses. In addition to the distinct and pleasing shades of colour of the flowers, they are, as is well known, beautifully scented. The sweet pea was introduced into this country from Southern Europe in 1700.

The best results in the way of a profusion of long-stemmed large flowers are obtained from seed sown in shallow drills about 4 ft. apart, in well-manured, light, loamy soil. At the same time fairly good results may be secured from seed sown in ordinary soil of average fertility. The first sowing may be made early in November, second the end of December (weather permitting), third early in March. A final sowing being made six weeks later, will give a good succession of bloom throughout the early summer and autumn months. The harder the flowers are picked, the better and longer the plants will continue to flower. Of course the plants require being supported in the same manner as the ordinary pea; they should also be watered at the roots in dry weather, in order to prolong the flowering period.

The following distinct varieties are the best to grow, viz.:-

- 1. The Bride .-- Pure white.
- 2. Scarlet Invincible.—Bright scarlet.
- 3. Countess of Radnor.—Delicate lavender.
- 4. Captain of the Blues, -Large blue.
- 5. Her Majesty.—Soft rosy pink.
- 6. Mrs. Eckford.—Fine primrose.

HARDY AND HALF-HARDY ANNUALS SUITABLE FOR SPRING AND SUMMER BEDDING.

A very good display may be made during the spring and summer by growing the kinds and varieties enumerated below. The seed may be sown in rows or patches, as the sower pleases. In any case the ground, assuming it to have been manured and dug, should be trodden and the surface raked over prior to sowing the seed thinly thereon. This should be covered lightly—say to the thickness of \(\frac{1}{4} \) in.—with light, sifted soil, made firm with a board or the back of the spade to compress seed and soil, afterwards watering through a fine rose. The plants should be thinned out when large enough to handle, so as to give the individual plants room to properly develop themselves. To want of attention in this matter is to be attributed many failures. Hence the necessity for sounding a warning note. Dull, showery weather should be chosen for thinning the plants, and, in the absence of rain at the time the work requires being done, water should be given before and after the thinning, as occasiou may require. The seed of hardy annuals should be sown early in March and April, and seed of the following kinds for early spring flowering should be sown early in September in a sheltered place, and when up they should be thinned out to ensure a sturdy growth, transplanting where they are to flower in March.

- 1. Campanula carpatica.—Blue, very profuse flowering; height 6 in.
 - 2. C. alba. White, very free flowering; height 6 in.
- 3. Candytuft (*Iberis*).—Free flowering, extra dark crimson; height 1 ft.
 - 4. C. purple.—Compact habit; height 1 ft.
 - 5. C. white.—Sweet scented; height 1 ft.
 - 6. Erysimum Perowskianum.—Orange; height 1 ft.
- 7. Eschscholtzia californica.—Bright yellow with orange centre; height 1 ft.
 - 8. Kaulfussia amelloides.—Bright blue; height 4 in.
- 9. Leptosiphon androsaceus.—Rosy lilac, very pretty; height 9 in.
- 10. L. aureus.—Rich golden yellow, suitable for rock-work; height 6 in.
 - 11. Limnanthes Douglasii. Yellow, with white edge; height 6 in.
 - 12. Nemophila atomaria. White, with black spots; height 6 in.
 - 13. N. insignis. -- Blue, with white centre; height 6 in.
 - 14. N. alba. Pure white; height 6 in.
 - 15. N. marginata. -- Blue, with white edge; height 6 in.
 - 16. N. maculata.—White, blotched with violet; height 6 in.

The nemophilas are very useful and showy, used either in masses or as edging.

- 17. Sanvitalia procumbens.—Rich brown and yellow; height 6 in.
- 18. Saponaria calabrica.—Rich deep piuk; height 9 in.
- 19. S. calabrica alba.—Pure white; height 9 in.
- 20. Silene pendula.—Bright pink; height 6 in.
- 21. S. pendula alba.—Pure white; height 6 in.
- 22. S. pendula ruberrima.—Deep crimson; height 1 ft.
- 23. Virginian stock.—Red; height 6 in.
- 24. Virginian stock.—White; height 6 in.
- 25. Whitlavia grandiflora. -- Violet; height 1 ft.

HARDY ANNUALS FOR SOWING IN MARCH AND APRIL.

- 26. Chrysanthemum, Cloth of Gold.—Showy golden-leaved variety; height 2 ft.
 - 27. C. coronarium. -- Double white; height 3 ft.
 - 28. C. dunnettii. Double golden; height 2 ft.
- 29. C. Golden Queen.—A very striking variety, flowers are large and of a bright golden yellow colour; height 2 ft.

- 30. C. inodorum plenissimum.—Pure white flowers, suitable for bouquets; height 18 in.
- 31. C. purpureum.—Purple flowers, varying slightly in shade; height 2 ft.
- 32. C. segetum grandiflorum (corn marigold).—Heads of bright yellow flowers, invaluable for cutting, as they retain their freshness for a long time in water; height 2½ ft.
- 33. Clarkia, Morning Glory.—This charming novelty is a great acquisition. The flowers are reddish purple tipped with white, and the habit of the plant is compact, being 9 in. to 12 in. high, and is very free flowering.
 - 34. C. pulchella.—Rose; height 18 in.
 - 35. C. pulchella alba.—White; 18 in.
- 36. C. pulchella marginata pleno.—Bright magenta, margined white; height 1 ft.
 - 37. Collinsea bicolor.—Lilac and white flowers, very attractive.
- 38. C. Candidissima.—Pure white, excellent for clumps in borders, ribbon lines, and as an edging to beds; height 9 in.
 - 39. C. grandiflora.—Showy dark-purple flowers; height 1 ft.
 - 40. C. grandiflora carminea.—Bright carmine flowers; height 1 ft.
 - 41. Coreopsis tinctoria.—Showy yellow and brown flowers.
 - 42. C. atrosanguinea.—Rich dark-red flowers.
 - 43. C. Drummondii.—Large yellow flowers, produced in abundance.
 - 44. Erysimum arkansanum.—Sulphur yellow; height 1 ft.
- 45. Linum campanulatum.—Beautiful large yellow flowers; height 18 in.
 - 46. L. grandiflorum album.—White; height 18 in.
 - 47. L. perenne.—Blue; eight 18 in.
- 48. Love-lies-bleeding (Amaranthus candatus).—Dark crimson; height 2 ft.
 - 49. Lupinus nanus.—Blue and white; height I ft.
 - 50. L. polyphyllus (large blue lupin).—Height 2 ft.
 - 51. L. P. albus (large white lupin).—Height 2 ft.
 - 52. L. P. roseum (large rose lupin).—Height 2 ft.
 - 53. Malope grandiflora. Dark crimson; height 2 ft.
 - 54. M. grandiflora alba.—Pure white; height 2 ft.
- 55. Mignonette, Double White (improved).—The spikes are long and covered with nearly pure white flowers, which, even for mignonette, are very sweet, delicacy of colour, added to its very sweet perfume, giving it a decided advantage over all other varieties for bouquet work; height 1 ft.

- 56. Machet.—A robust free-growing variety, with stout spikes of buff coloured flowers; the best all-round variety to grow.
 - 57. Spiral.—A fine free-flowering new variety, producing spikes ft. high.

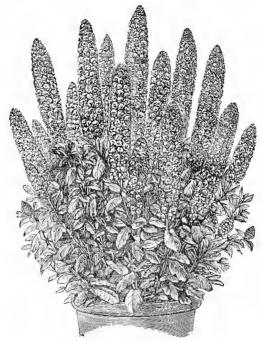


Fig. 62.

HYBRID SPIRAL MIGNONETTE.

- 58. Nasturtium Tom Thumb .- Gold orange; height 1ft.
- 59. N. Crystal Palace Gem.—Sulphur yellow; height I ft.
- 60. N. (dark foliage section) Empress of India.—A sensation variety, intense brilliant crimson; height 9 in.
- 61. N. (Tall tropwolum) majus.—Orange and scarlet, useful for draping poles, arches, &c.; height 8 ft.
- 62. Nigella damascena (Love-in-a-mist). Larkspur-like habit, colour lavender blue, very beautiful; height 1 ft.
- 63. N. hispanica (Devil-iu-a-bush).—Delphinium-like foliage, upper segments resembling horns, blue; height 1 ft.
- 64. N. hispanica alba.—A white variety of the preceding; height 1 ft.; very useful for cutting.
- 65. **Poppy** (*Papaver*) **pavonium** (Peacock poppy).—An Oriental variety, scarlet with black ring, flowers in clusters; height 1 ft.

- 66. P. marselli.—The Mikado-fringed Japanese poppy is a quaint and charming variety; the petals of the flower are cut and fringed in a most elegant manner. The colour is pure white at the back, whilst the fringed edges are of the most brilliant crimson scarlet, heing very attractive.
- 67. P. mephisto.—Beautifully fringed petals, colours varying from red and black to rose and white; height 3 ft.
- 68. P. The Shirley.—A very beautiful selection of the ranunculus-flowered poppy, the range of colours extending from pure white through the most delicate shades of pale pink, rose, and carmine, to the deepest crimson, and many of the flowers being delicately edged, shaded, and striped, give additional charm to the effect produced by masses or lines of the single and semi-double flowers; height 2 ft.
 - 69. Viscaria oculata.—Rose, with dark eye; height 1 ft.

ANNUALS THAT ARE BEST RAISED IN HEAT.

SEED of the subjects named under the above heading should be sown in pans, shallow boxes, or in a frame placed on a gentle hot-bed, or even in a sunny situation, with a few inches deep of rich, fine soil deposited in it for the reception of the seed. This having been made level, divide it into as many square spaces as there are packets of seed to be sown therein. Sow the seed the end of March or early in April, covering it lightly and giving water. Then keep the frame close and shaded until the seedlings appear, when the shading should be gradually removed and fresh air admitted to the frame, in proportion to the growth made by its occupants and the character of the weather. The seedlings should be pricked out in prepared soil before they get crowded. in rows 6 in. apart and at the same distance in the rows, where a little temporary protection from sun and frost can be given when required, transplanting about 1 ft. apart every way towards the end of May, with nice balls, pressing the soil about the roots in planting, and afterwards watering to settle the soil.

ASTERS.

(Callistephus hortensis.)

1. Cockade, or Crown.—A very handsome variety, with large flowers, the centres of which are pure white, surrounded with bright colours, presenting the appearance of a cockade.

- 2. Dwarf Chrysanthemum-flowered.—One of the best varieties for pot cultivation (three plants in a $4\frac{1}{2}$ -in. pot make a good display), and for using as an edging to the taller-growing varieties of stocks and asters, it being of dwarf habit, about 9 in, high, flowers large and well reflexed, and later than other varieties.
- 3. Improved Dwarf Pyramidal Bouquet is a free-blooming variety; —12 in. high.
- 4. Improved Quilled.—Flowers very double, of oval form; the petals have the appearance of quills or tubes, and the outer ring is sometimes slightly reflexed; height 18 in.
- 5. Pæony-flowered Globe.—Flowers very large in form, similar to a pæony, petals large and flat, very beautiful; height 15 in.
- 6. Pæony-flowered Perfection.— The finest and most generally cultivated variety, the flowers are large, and the petals beautifully incurved; height 18 to 24 in.
- 7. Pyramidal.—Producing immense trusses of flowers nearly of one height, with few side blooms.
 - 8. Victoria. Having extra large, flat, reflexed petalled flowers.

GAILLARDIAS.

THESE half-hardy perennials deserve to be more extensively grown than they are at present. Their long blooming period and splendid colours are ultimately sure to make the gaillardia a favourite flower. The plants range in height from 18 in. to 2 ft.

The following are the best varieties to grow for planting in masses, patches, or lines:—

- 1. Amblyodon.—Strong-growing flowers, deep red.
- 2. Grandiflora rosselari.—Handsome large yellow and brown flowers, with distinct, broad foliage; height 3 ft.
- 3. Picta.—A favourite bedding variety, producing throughout the summer a profusion of yellow and scarlet flowers.
- 4. Picta fistulosa.—Beautiful yellow and red flowers with quilled petals.
 - 5. Picta lorenziana.—Very showy, double yellow flowers.
- 6. Picta marginata.—A showy variety, with crimson flowers and yellow margin.

GOLDEN FEATHER.

(Pyrethrum parthenium aureum.)

This popular edging plant is best treated as an annual for using either as an edging, separating lines, or filling in patterns in beds or borders

laid out geometrically. The first week in April is quite soon enough to sow the seed; if sown earlier the plants are likely to present a shrubby, rough appearance by repeated pinching out of the flower spikes. The seedling plants may be set out at 3 or 4 in apart in order to get the ground covered. The natural beight of the plant is 1 ft., but treated as indicated it will not exceed a height of 4 in., the flower spikes being pinched out as soon as they appear—as the plant is grown simply for its beautiful yellow and handsomely cut foliage.

LOBELIA.

A STOCK of this well-known and popular bedding plant, "blue lobelia," may be easily raised from a small packet of seed sown in a pan in February, watered and put in heat, and afterwards pricking the seedling plants into shallow boxes in bunches of two or three plants at 3 in. apart, watering and shading from sun for a few days until the roots have taken to the light, rich sandy mould, which should be given them; afterwards gradually hardening the plants off prior to finally transplanting them out-of-doors early in June. But where the accommodation of a greenhouse or pit, from which frost can be kept out, is not at hand, it is much better to select and pot up a few plants of good habit early in September, cutting all the flower spikes off, keeping the soil somewhat dry at the roots during the winter, and in the spring to propagate from these plants. In which case plants of uniform height and flowers of the same shade of colour may be relied upon.

The following varieties may be depended on :--

- 1. Crystal Palace Compacta. Very compact habit and free-flowering, deep-blue flowers.
- 2. Erinus speciosa.—Producing in great profusion large blue flowers with white centre.
- 3. Gracilis alba.—Trailing branching habit, rendering it very suitable for hanging baskets, rockeries, and vases, the flowers, as the specific name implies, being white.
- 4. Pumila Distinction.—An entirely new section of tuft-like habit, half-hardy perennial, rosy red; 3 in. high.
- 5. Pumila magnifica.—Compact cushion-like habit, producing in great abundance deep-blue flowers, all 3 to 6 in. high.
- 6. Pumila White Gem.—The most perfect white variety in cultivation, compact habit, and profuse bloomer.

MARIGOLDS.

(Calendula officinalis.)

ALL sections of the marigold are showy and very floriferous plants, and look well either in masses, mixed, or in separate colours, or in lines in ribbon borders.

The following varieties are the most serviceable:-

- 1. Marigold, Butterfly.—A very beautiful form of the French marigold; the flowers are borne in great profusion from July to November, the alternate petals of velvety purple brown and old gold being most clearly defined over the entire plant; height 18 in.
 - 2. M. Cloth of Gold.—A haudsome striped variety; height 18 in.
- 3. M. lemon (African).—Clear lemon-colour variety, with fine large double white flowers, well adapted for mixed borders; height 2 ft.
- 4. M. striped.—Striped varieties of dark brown, maroon and gold, nice garden varieties; height 1 ft.

NICOTIANA.

(Tobacco.)

THE various varieties of the tobacco in cultivation are principally employed in sub-tropical gardening. They range in height from 4 ft. to 6 ft., and produce large greyish-green leaves. But the sweetscented N. affinis is the only one I shall mention here, and this subject is deserving of extended culture; that is, everybody having a hot-bed or greenhouse, and a small patch of front garden, should grow a few plants of it. The long, tubular, white flowers, which are freely produced, on the approach of evening and throughout the night perfume the air with their delicious fragrance, so that it is admirably adapted for planting in flower and shrubbery borders and other frequented spots, as well as for pot culture, for rooms, &c. The seed is best sown in a 4½-in. pot or pan, covering it lightly, watering gently, then placing in heat. When the young plants are large enough to handle they should be pricked out in a pan or shallow box about 2 in, apart, giving them fine, rich, light soil, afterwards potting them singly into 3-in, and again into $4\frac{1}{2}$ -in, and 6-in, pots, and attending to them in the way of watering. Those intended for flowering out of doors may be transplanted out of the 3-in. pots about the end of May or the middle of June, according as the district is warm or cold, and the weather prevailing at the time. It is not generally known that this plant will grow and flower freely the following summer and autumn in warm situations if the roots are left in the ground, where it seeds and grows freely.

PETUNIAS.

Petunias are very easily raised, and they are very useful and showy bedding plants. They are well adapted for planting in masses, in blocks or vases, as the plants are of trailing habit. The flowers are single, curiously veined and interlined, striped and spotted, crimson, purple, carmine, rose, and almost every shade of colour from crimson to snowy white. The seed may be sown in the same way as lobelia, and the seedlings treated as recommended under that heading.

PHLOX DRUMMONDII.

It is almost impossible to speak too highly of the merits of this half-hardy annual, as it has richness and diversity of colour, duration in bloom, profusion of blossom, and dense, free-growing, trailing habit to recommend its culture. It is a very manageable plant. It may be grown in lines, the young shoots being pegged down in position and afterwards kept cut into shape, but it is when planted in masses that it is seen to advantage. It is admirably adapted for planting in beds of standard roses, as the trailing shoots, in addition to covering the ground with a dense carpet of the brightest and softest of colours, will attach themselves to the naked stems and clothe them with their gorgeous colours without in any way interfering with the welfare of the roses. The best way is to obtain a packet of **Phlox Drummondii grandiflora**, mixed, and sow at the same time as asters and stocks, and treat in the same manner as regards pricking and transplanting.

THE STOCK.

(Mathiola.)

STOCKS are admired pretty well by everybody, and are generally cultivated and associated with asters, the same treatment suiting both. Prominent positions are accorded them in most gardens. The effect produced by planting masses, rows, or patches of the best varieties in good soil is very telling, and, in addition to the pure white and dazzling scarlet colours, they diffuse their fragrance freely, especially in the early morning and at eventide.

The following varieties are among the best:-

1. Brompton (M. simplicicaulis).—A true son of Britain, being sturdy, hardy, and hold in growth; the original species was a striking plant attaining sometimes to a height of 3 ft.; a vigorous stem, fibrous, and in some cases woody. The Brompton stock is really a

biennial, and succeeds best if sown in a cool situation in June, July, or August, the young plants being pricked out in a sunny border and ultimately planted where they are to flower. A packet of mixed seed of each type of stock herein named should be obtained, which will include all the best colours; height 2 ft.

- 2. East Lothian (M. annua hybrida).—There appears to be some uncertainty about the origin of this splendid stock, raised, as the name indicates, in East Lothian; the best ascertained view is, that it is the result of crossing the intermediate with the Brompton. But be this as it may, the spikes of blooms as well as the individual flowers are very large, double, profuse, and the habit of the plant is also good. It succeeds best when sown in July or August. Young plants potted up in $4\frac{1}{2}$ -in. pots, using rich compost, are admirably adapted for greenhouse and room decoration. The colours are purple, scarlet, and white, and may be obtained in separate or mixed packets; height 18 in.
- 3. German, dwarf (M. annua densiflora), is a very popular species, of dwarf, compact habit, and branching from the ground line, and the inflorescence consists of a longer central spike and shorter lateral or side ones, the colours being, as a rule, crimson, purple, rose, scarlet, and white. This is also a suitable subject for pot culture; height 1 ft.
- 4. Intermediate (M. annua intermedia) is, presumably, a cross between the Ten-week and Brompton. It is much esteemed by market gardeners, who, having plenty of garden frames at command, grow large quantities of it, giving it, as all stocks should have, generous treatment. They get it in to flower early in spring, and more or less during the autumn and winter mouths, supplying the flower markets in London and other large towns; height 1 ft.
- 5. Night-scented Stock (M. bicornis) sheds its fragrant odour at the approach of evening; height 1 ft.
- 6. Ten-week (M. annua).—This is the best known of all stocks under the name (given it by old writers) of gillyflower, which has long been associated with the cottage gardeu. The old variety was sweet-scented but single, whereas the Ten-week stocks of to-day are mainly double, and as deliciously fragrant as of yore; height 1 ft.

TAGETES.

This hardy composite annual is very useful for mixed beds or pots. The best varieties are :—

1. T. Golden Ring.—Golden orange, free flowerer; height 9 in.

- 2. T. Lucida.—Sweet-scented yellow flowers and shining green leaves.
- 3. T. signata pumila.—A profuse bloomer, the bright yellow flowers being very showy in autumn.

ZINNIA ELEGANS.

This is a valuable bedding and border annual, remaining in bloom for a long period, and are excellent wet-weather flowers, that is, the flowers withstand the effects of heavy rains better than the majority of flowers do. The flowers obtained from a good strain of seed, and the plants being given generous treatment, are fine in size, variety, and richness of colour. The seed should be sown about the middle of March. The same treatment recommended for asters will suit zinnias. which, like asters and stocks, require support. Seed may also be sown on a warm border in May, afterwards thinning out the young plants, which may also be employed with effect in the decoration of vases, &c. The flowers of Z. elegans are single, while those of Z. indica are double and of great beauty and utility, equal in form to the finest aster, and superior to it in variety of colour. A bed of double zinnia is very telling, and not easily forgotten. It is also suitable for pot culture for embellishing greenhouse, conservatory, or rooms. The plants, when well established in pots, require frequent and liberal supplies of water being given at the roots; height 18 in. to 2 ft.

HALF-HARDY CLIMBERS.

- 1. Clianthus Dampier (the glory pea of Australia).—This is a gorgeous cool greenhouse and hardy climber, producing in July and August intense scarlet and curiously-shaped flowers, with a black central boss and handsome fern-like foliage; height 6 ft.
- 2. Cobea scandens.—A showy, quick-growing greenhouse climber, with purple bell-shaped flowers; height 20 ft.
- 3. Ipomæa (convolvulus) Bona Nox.—Greenhouse annual; violet, scented flowers, blooms in the evening; height 10 ft.
- 4. I. coccinea (star ipomæa).—Small long-tubed scarlet blossoms in profusion; height 6 ft.
- 5. I. hederacea superba.—A splendid variety, with large ivy-shaped leaves, and blue with white-margined flowers; height 8 ft.
 - 6. I. limbata elegantissima.—Purple and white; height 6 ft.
 - 7. I. rubro-cœrulea.—Sky-blue flowers, greenhouse; height 8 ft.

- 8. Lophospermum coccinea.—Brilliant red flowers; height 8 ft.
- 9. Maurandya Barclayana.—Pretty foliage, purple flower with white eye, free bloomer; height 6 ft.
- 10. Passiflora cœrulea.—A handsome cool greenhouse climber, producing chaste blue and white flowers and handsome leaves. It is quite hardy planted against south walls or fences in the south of England and Ireland; height 20 ft.
 - 11. Thumbergia alata.—Yellow with rich brown eye; height 4 ft.
 - 12. T. alba.—White, with dark eye; height 4 ft.
 - 13. T. coccinea.—Scarlet; height 4 ft.
- 14. Tropæolum canariensis ("canary creeper").—Yellow flower, with prettily cut leaves; height 8 ft.
- 15. **T. speciosum.**—Crimson flame-coloured flowers, tuberous rooted, and having elegantly cut four to six cleft foliage, a great favourite in the north of England and in Scotland; 6 ft. high (see p. 172).

EVERLASTING PLANTS.

THESE are very useful as well as effective subjects for pots, window boxes, &c. A light soil and warm situation are necessary to grow them in perfection. The everlasting floral heads desired for vases, &c. should be cut before the flowers get full blown.

The following mentioned varieties may be considered the cream of the "Everlastings":—

- 1. Acroclinium album.—White; height 1 ft.
- 2. A. flore pleno.—Double rose flowers; height 1 ft.
- 3. A. roseum.—Rose-tinted flowers; height 1 ft.
- 4. Ammobium alatum.—Pure white; height 18 in.
- 5. **Gomphrena** (globe amaranth).—Globular flowers, consisting of flesh, orange, yellow. purple, variegated, and white; adapted for winter bouquets and pot culture, growing three plants in a $4\frac{1}{2}$ -in. pot; height 1 ft.
- 6. Helichrysum bracteatum (golden everlasting flower).—Single blossoms, branching habit; height 2 ft.
- 7. H. bracteatum album.—White variety of the preceding; height 2 ft.
- 8. **H. brachyrhynchum.** Silvery grey foliage, golden-coloured flowers, branching habit; height 2 ft.
- 9. **H. compositum.**—Flowers of all colours, sometimes assuming "hen and chicken" form; height 2 ft.

- 10. **H.** double dwarf (immortelles, in crimson, rose, white, yellow, purple, and scarlet).—These colours, separately and mixed, are extensively grown for the purpose of producing cut blooms for house decorations at Christmas festivals and other important occasions when fresh flowers are scarce. Winter bouquets made from them for vases, &c. are greatly improved by the admixture of dried specimens of ornamental grasses. The plants of the double helichrysum range in height from 18 in. to 2 ft. They may be grown in beds with some of the dwarfer varieties near the outside and an edging of blue lobelia, or in rows.
- 11. H. Fireball.—A charming novelty, crimson flowers; height 18 in.
 - 12. Helipterum Sanfordi.—Golden yellow; height 2 ft.
 - 13. Polycolymna Stuartii. Yellow and white; height 1 ft.
- 14. Rhodanthe maculata.—Deep rose with yellow disc; height 18 in.
 - 15. R. atrosanguinea.—Crimson, very handsome; height 18 in.
 - 16. R. maculata alba. Silvery white; height 18 in.
- 17. R. maculata flore pleno is a very elegant and pretty variety, producing a profusion of flowers of bright rosy carmine colour, admirably adapted for pot culture; height 18 in.
 - 18. R. Manglesii. Bright rose; height 18 in.

The rhodanthes are the most beautiful and useful of everlasting flowers.

- 19. Waitzia aurea.—Flowers golden yellow, produced in clusters, close centre and wider exterior or guard petals; height 1 ft.
 - 20. W. grandiflora.—Bright yellow, very fine; height 1 ft.
- 21. **Xeranthemum annum purpureum flore pleno.**—Double purple flowers; height 2 ft.
 - 22. X. annum flore pleno.—White; height 2 ft.

ORNAMENTAL GRASSES.

THESE are very beautiful and useful decorative subjects, used either in a fresh or dried state, intermixed with flowers; in a like condition employed in the composition of designs for table and mantelpiece ornamentation, &c., they produce an elegant and pleasing effect. A short row of each of the kinds and varieties named below would yield ample supplies for ordinary purposes. A west aspect is the most suitable situation, choosing light rather than heavy soil for the reception of the seed. Rake the ground over with a fine iron rake before drawing the drills. These should be 1 ft. apart and about 1 in. deep. Sow the

seed thinly in these about the mlddle of March, closing in the soil, treading and raking it over, and in the event of dry weather prevailing at the time, water through a spray distributor two or three times a week to moisten the soil about the seed, thereby assisting the process of germination.

The list given below includes the best and most useful grasses to cultivate for the purposes indicated:—

- 1. Agrostis nebulosa (annual).--A very beautiful variety.
- 2. A. pulchella (annual).—Excellent for winter bouquets.
- 3. A. setacea (the bristle-leaved bent grass). -- Erect and ornamental.
- 4. A. stolonifera (creeping bent grass).—Very effective.
- 5. Alopecurus pratensis (meadow fox-tail grass).
- 6. Anthoxanthum odoratum (sweet vernal grass).
- 7. Avena flavescens (yellow oat grass).—Very useful variety.
- 8. A. sterilis (animated oats) .-- Very curious.
- 9. Briza geniculata (spreading quaking grass).
- 10. B. maxima (quaking grass).—Very elegant.
- 11. B. minima (small quaking grass).—Very pretty.
- 12. Bromus madritensis.—Very fine.
- 13. B. secalinus (smooth rye broom grass).—Very telling.
- 14. Chloropsis blanchardiana—Perennial, with silky, rose-coloured spikelets.
 - 15. Coix lachryma (Job's tears).—Annual; 2 ft.
 - 16. Cynosurus cristatus (crested dog's-tail grass).
 - 17. Dactlylis glomerata (orchard grass.
 - 18. Eragrostis elegans (love grass).—Annual, very beautiful.
- 19. Erianthus ravennæ.—A superb perennial grass, with silvery plumes.
 - 20. Festuca elatior (tall fescue grass).
 - 21. F. duriuscula (hard fescue grass).
 - 22. F. loliaceæ (rye or darnel-leaved fescue).
 - 23. F. ovina tennifolia (slender fescue grass).
 - 24. F. pratensis (meadow fescue grass).
 - 25. F. sylvatica (wood fescue grass).
 - 26. Holcus lanatus (soft meadow grass).
 - 27. Phleum pratense (Timothy grass).
- 28. Poa aquatica (water meadow grass).—This requires a moist place.
 - 29. P. fluitans (floating meadow grass).
 - 30. P. nemoralis (wood meadow grass).

- 31. P. pratensis (blue grass).
- 32. P. trivialis (rough stalked meadow grass).
- 33. Stipa elegantissima. The queen of ornamental grasses.
- 34. S. pennata (feather grass).—Perennial; 2 ft. high.
- 35. Trifolium arvense.—A pretty glaucous plant.
- 36. Triticum caninum (fibrous-rooted wheat grass).

ROSES AND THEIR CULTURE.

THE rose is so well known as to render anything like a lengthy description of it here unnecessary. I shall therefore content myself in making a few general remarks on its culture, together with giving brief lists of suitable varieties of the several sections for readers of "MY GARDENER" to grow, increasing or decreasing the numbers according to their requirements.

Soil and Situation.—The soil that the rose delights in is a rich, deep, fibrous loam, inclining to be heavy rather than light, and resting on a gravelly subsoil, and should the situation be sloping south-east or south-west, all the better. Should the natural soil be of a light description, some clay should be added and well mixed with it. On the other hand, should the ground be considered unduly stiff and heavy, leaf-soil, road sand, coal-ashes, burnt earth, and well-rotted manure should be incorporated therewith. Good wheat land will produce good roses, their cultural requirements being attended to.

Planting.—Although roses may be planted with impunity any time from the beginning of November to the end of February (weather permitting), the sooner the work is done in November the better it will be for the trees. If the trees are planted in rows, holes about 18 in. deep and about the same distance across should be excavated, putting, where necessary, a few inches deep of clinkers, brickbats, or stones, broken on the top as drainage, replacing the excavated soil, or part of it, with half a barrowful of a mixture consisting of three parts best loamy soil obtainable and one of good rotten manure. This being well mixed. plant the individual trees in the centre of each hole about the same depth in the soil they were before, treading the soil well about them. done, put a stout stake to each tree for support, and lay on a few inches deep of rotten manure as a mulching. This will preserve the roots in a more equable condition than would otherwise be the case, and will prevent frost penetrating to them. Choose a fine day for planting, and rather than plant when the ground is very wet, lay the trees in by the heels and wait for a fine day. Roses grown in beds should have a good surface dressing of manure laid on before severe frost sets in. forking it into the ground in March after the pruning is done.

Pruning.—This, as already stated, should be performed in March, varying the time from the middle to the end of the month, according as the situation is early or late. However, a few of the most favourably situated trees may be pruned early in March, with a view to securing early blooms, afterwards completing the operation at short intervals extending over the period indicated. This is a perfectly safe and advantageous method of procedure to pursue. April will be soon enough to prune spring-planted trees; it is also a good time to prune Tea-scented and Noisette kinds. If the trees of hybrid perpetuals are young ones of the previous year's working; the strength of the individual shoots must guide the extent of the shortening; if vigorous, cut back to five or six eyes; if weak-growing, prune back to two or three eyes. Tea-scented and Noisette roses should only have the weak growth thinned out and the strong shoots shortened back a little. following and succeeding years' trees of hybrid perpetuals should have the weak shoots cut hard back and the strong ones pruned back to a couple of eyes, more or less, according to the size and shape of the "head" of each tree. The summer varieties of the moss rose should be only sparingly pruned. Do not allow established plants of any kind of rose to get crowded; if anything, err on the side of thinness. In all cases prune to a bud pointing outwards. Roses on their own roots and pegged down in beds should have some of the old shoots cut out to make room for an equal number of the strongest growths of last year's make, spurring back the side shoots on the old ones retained to within one eye of their origin,

Watering.—Should a spell of dry weather set in in April, May, or Juue, all rose trees, especially those growing in beds as described above, should be copiously watered at the roots, repeating the application more or less frequently, according as the soil is light or heavy, and should aphis attack the trees, syringe them overhead in the evening after the sun is gone off with a solution of water and tobacco juice, in the proportion of four gallons of the former to one quart of the latter. This will not only dislodge the aphis, but in all probability will render the leaves so washed distasteful to future attacks. The rose maggot sometimes works havoc among the leaves and flower-buds if not well looked after. They may be found rolled up in the leaves, where they may be squashed, or the leaves may be unfolded and the maggots removed, where time permits of this being done. If fine, large blooms are aimed at, the buds should be thinned out, and if this is done at intervals of a few days a better succession of blooms will also be secured.

Propagation.—The rose is propagated by seeds, cuttings, layers, and suckers (in the case of plants on their own roots), and by budding and grafting. Seed-sowing is only had recourse to with a view of obtaining improved varieties. Cuttings taken off with a heel, that is, with a little

of the old or ripened wood attached, may be struck at any time between February and November, or at any time in the year where artificial heat is at command. The cuttings, about 9 in. long, may be inserted 5 or 6 in. deep in the soil in rows 9 in. apart and at 2 in. in the row, choosing a border at the north side of a wall, hedge, or fence, and light, sandy soil for dibbing the cuttings into, giving preference to the early part of October for doing the work, and making the soil firm about the cuttings. Where hand-lights are to spare, place them under a south or west wall early in October, or under a north wall any time during the snmmer; place therein a few inches deep of light loam with a surfacing of sand, and into this dibble the cuttings pretty closely together, letting a little of the sand into the hole round the base of each cutting in putting them in, to hasten the emission of roots, giving water to settle the soil. The following autumn-say twelve months from the time the cuttings were put in—the young rooted plants should be transplanted in good soil, potting up a few of the best, if desired, to work up a stock of pot roses. Roses may also be propagated from "eyes," prepared in March in the same way as vine "eyes," described under the heading of "VINES," placing the "eyes" closely together in pans properly drained and filled to within $\frac{1}{6}$ in, of the top with light, loamy soil, with a layer of sand on top, covering lightly and watering gently to settle the soil about them, and then placing the pans in a frame on a hot-bed and keeping close until the "eyes" have made top and bottom growth, when they should be potted off singly into small pots. A young plant (one of a batch) thus struck by the author of this work was illustrated and described in the Gardeners' Chronicle a few years ago, for the first time (see Fig. 62).

Budding is the modus operandi generally followed in the perpetuation of the rose, and many choice trees and shrubs as well. The stocks employed are the dog rose, taken from the hedgerows early in winter, trimmed at the roots and beheaded, leaving stems varying from 2 to 31/2 and 4 ft. high, these briars being planted in rows about 4 ft. apart and at 6 in. in the row. Room is easily found for two or three dozen such briars in every cottage garden alongside of the paths. In selecting briars choose clean-stemmed ones about 3/4 in. in diameter and of kindly When the buds push in spring select two or three of those nearest the top for budding on, rubbing all the others off. If three buds or shoots-the preferable number-are retained, they should form a triangle. The other stocks are the Boursault and Manetti, which are struck from enttings put in like roses. The buds are prepared and inserted in the same manner as described under the heading of "GRAFTING AND BUDDING FRUIT TREES," the buds being inserted as close to the main stem as possible in the case of standards, and just below the ground line in the Boursault and Manetti stocks for dwarfs.



Fig. 63 —ROSE FROM AN EYE.

The operation may be performed any time from the middle of July to the end of the month, or even later, that the bark will run freely. Good prominent buds should be selected.

Layering may be performed any time during the summer by simply bending the shoot, or shoots, desired to root down to the ground, cutting the same half-way through longitudinally and pegging it down at that point, so that the wounded surface shall come in contact with the sandy soil, watering in dry weather to keep the soil moist.

The varieties in the following selections include some of the best of the respective kinds in cultivation:—

BOURBON ROSES.

- 1. Acidalie.—White, tinted rose, very beautiful.
- 2. Armosa.—Clear, bright pink, an old but excellent rose of Chinalike habit, a constant-blooming variety.
- 3. Catherine Guillot.—Very bright carmine rose, free bloomer, and good habit.
- 4. Queen of Bedders.—Deep crimson, the colour of the well-known Charles Lefebvre, very free flowering.
 - 5. Rev. H. H. Dombrain.—Bright carmine, large, and of good form.
- 6. Souvenir de la Malmaison.—Pale blush, very large, a fine and free-blooming autumn rose a time of year when the Bourbon roses produce their best blooms.

CHINA ROSES.

- 7. American Banner.—Flowers semi-double, yellowish white, with broad, rose-magenta stripes, very free flowering.
 - 8. Archduke Charles.—Rose, changing to deep crimson.
 - 9. Clara Sylvain. Pure white, large.
 - 10. Cramoisie Supérieure.—Brilliant crimson; fine for beds, &c.
- 11. Ducher.—Pure white, medium size, full, and well-formed growth, vigorous; fine for massing.
- 12. James Sprunt.—Deep crimson, pretty shape, of moderate size, a distinct, climbing-habited sport from Cramoisie Supèrieure.

HYBRID CHINA ROSES.

- 13. Blairii No. 2.—Pale blush, very large and double.
- 14. Coupe D'Hébé.—Waxy pink, beautiful.
- 15. Fulgens.—Bright crimson-scarlet, superb.
- 16. Juno.-Pale rose, very large.
- 17. Madame Plantier.—Pure white, in large clusters.
- 18. Paul Verdier.—Very bright rose, large, full, and fine shape, very vigorous.

HYBRID PERPETUALS.

19. A. K. Williams. —Bright carmine red, large, round, imbricated flower.



Fig. 64.—A. K. WILLIAMS.

- 20. Alfred Columb.—Bright red, full, very showy.
- 21. Augustine Rigotard.—Cerise red, flowers large, growth vigorous.
- 22. Bessie Johnson, -Blush white, large, very sweet, good habit.
- 23. Captain Christie.—Delicate flesh colour, deeper in the centre, very effective.
- 24. Charles Lefebvre.—Fine, bright, dazzling crimson-scarlet; shape, colour, and form very good.
- 25. Comtesse D'Oxford.—Brilliant carmine, very large and full, of fine form and vigorous growth.
- 26. Dr. Sewell.—Brilliant crimson-scarlet shaded with purple; large, full, and finely cupped form.
- 27. Duchess of Edinburgh.—A fine, light-coloured rose, large, full, and well formed.
- 28. Duke of Connaught.—Rich, bright, velvety crimson, with an ntense fiery blush; free and good as a garden show rose.
 - 29. Fisher Holmes.—Bright scarlet, imbricated,

- 30. Francois Michelon.—Deep rose, reverse of petals silvery, large, full, and globular form.
- 31. Helen Paul.—White, sometimes shaded with pink, large, full, and globular; seedling from Victor Verdier.
- 32. Hippolyte Jamain.—Fine, bright rose, shaded with carmine, very large, full form.
- 33. John Hopper.—Fine rosy crimson, back of petals fine lilac tint, large and full.
- 34. Julius Finger.—White, centre shaded with pink, growth very vigorous, flowers large, full, and perfect in form.
- 35. La France.—Beautiful rosy lilac, very distinct, large and full, free blooming.
- 36. Madame Eugéne Verdier.—Bright rose, suffused with white, large and effective.
- 37. Magna Charta.—Bright pink, suffused with carmine, very large, full, and of good form.
- 38. Marguerite de St. Amand.—Bright pink, large, full, and imbricated form.
 - 39. Marie Baumann. Light crimson red, very large and full.
 - 40. Mdlle. Marie Rady.—Fine brilliant red, good form, and very fine.
- 41. Miss Hassard.—Delicate pinkish flesh, large, full, and fine form, very sweet scented.
- 42. Ulrich Brunner.—Bright cerise red, large and full; a seedling from Paul Neron.

Moss Roses-Summer Varieties.

- 43. Alice Leroy.—Blush, shaded with rose, large and double.
- 44. Baronne de Wassenear.—Deep rose, very large, double and showy.
 - 45. Captain Ingram.—Dark velvety purple, fine.
- 46. Marie de Blois.—Bright rose, large, full, well mossed, handsome buds.
 - 47. Nuits D'Young.—Velvety purple.
 - 48. White Bath.—Paper white, beautiful, large and full.

PERPETUAL MOSS ROSES.

- 49. Blanche Moreau.—Pure white, of perfect form. well mossed, the sepals passing beyond the bud nearly an inch.
 - 50. James Veitch.—Deep violet, shaded crimson, large and double.
 - 51. Madame Edouard Ory.—Reddish crimson.

- 52. Madame Moreau. Fine vermilion-red, veined with white, very large.
 - 53. Perpetual White Moss. White, very pretty in the bud.
- 54. Soupert et Notting.—Fine bright rose, perfect form, very large and full.

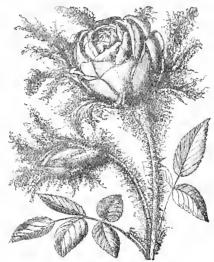


Fig. 65.-MOSS ROSE.

Noisette Roses.

- 55. Aimée Vibert.—Pure white, small, in large clusters, vigorous.
- 56. Celine Forestier.—Pale yellow, deep yellow in centre, vigorous, the opening buds being charming and most useful for button-holes and bouquets.
- 57. Cloth of Gold.—Pale yellow with deeper centre, large and vigorous.
- 58. Madame Caroline Kuster.—Beautiful orange yellow, large and globular, and of vigorous growth.
 - 59. Madame Massot.—White, in large clusters.
- 60. William Allen Richardson.—Orange yellow, flowers small, best in the bud stage of development.

All the yellow roses in this section should be grown against a south or west wall or wooden fence, training the shoots about 4 in apart from one another.

SINGLE ROSES.

Single roses are very useful for decorative purposes, either planted singly in the flower garden or shrubbery borders, or in masses. The

flowers being of various shades of colour, ranging from the white Japanese Rosa Rugosa alba to that of the copper-coloured Austrian briar, are very useful and effective for bouquets and vases.

The following varieties are very beautiful and distinct:-

- 61. Berberifolia Hardii. Fine single yellow, with maroon spots.
- 62. Camellia Japonica.—Pure white, with large yellow stamens.
- 63. Copper Austrian briar.—Nankeen yellow, very distinct.
- 64. Macartney simplex.—Large single white, evergreen shining leaves.
- 65. Rugosa.—A very handsome variety; it forms an evergreen bush about 3 ft. in height, producing a profusion of single carmine-crimson flowers, which are succeeded in autumn by bunches of large berries of a rich coral-red colour, which remain on the plant during the winter, if there are no pheasants about to devour them.
 - 66. Rugosa alba.—A pure white variety of the above.

TEA-SCENTED Roses.

- 67. Belle Lyonnaise.—Deep canary yellow, tinged with salmon, large and full; a seedling from Gloire de Dijon.
- 68. Catherine Mermet.—Delicate flesh-coloured rose, large and full, fine form; a fine rose for training under glass roof in a greenhouse.
- 69. Comtesse de Nadaillac.—Apricot yellow, fine globular shape, and double; vigorous grower.
 - 70. Devoniensis.—Creamy white, tinted rose, large.
- 71. Etoile de Lyon.—Sulphur yellow, with bright yellow centre, large and full.
- 72. Gloire de Dijon.—Buff, orange centre, very large, fine strong grower; a well-known rose.
 - 73. Isabella Sprunt.—Sulphur yellow, free bloomer.
 - 74. Letty Coles.—Beautiful pink, of good form and free habit.
 - 75. Madame Falcot. -Rich orange yellow.
- 76. Maréchal Niel.—Beautiful deep yellow, large, full, and of globular form, very sweet, the shoots well clothed with large shining leaves; a magnificent and popular variety.
- 77. Niphetos.—Pale yellow, fine magnolia-like petals. The climbing variety of this rose is admirably adapted for growing under glass, or against a south wall in a warm district.

78. Reine Marie Henriette.—A red Gloire de Dijon, possessing the good properties of that favourite rose.



Fig. 66.—CATHERINE MERMET.

AYRSHIRE ROSES.

(Rosa arvensis.)

THESE make compact bushes, and are adapted for planting either singly on lawns or in shrubbery borders. The shoots are very thickly set with prickles, and they produce freely small, round, white, rose and other coloured flowers and small leaves.

The varieties recommended are:-

1. Alice Grav.—Creamy white.

- 2. Dundee Rambler .- White, tinged with pink.
- 3. Myrrh-scented.—Creamy white, scented with myrrh.
- 4. Queen of the Belgians .- Pure white.
- 5. Ruga.—Pale flesh, very fragant.
- 6. Splendens (myrrh-scented).—White, edged with red, semi-double.

BANKSIAN ROSES.

(Rosa Banksiæ.)

THESE popular climbing roses should be given a warm situation and be allowed plenty of room to develop and show off to the best advantage their small, globular, white and yellow flowers and long shining leaves.

The varieties cultivated are :--

- 1. Fortunei.—White, large-sized flowers.
- 2. Jaune Serin.—Very rich yellow, with fine foliage.
- 3. White.—The old variety, small white flowers.
- 4. Yellow.—The old variety, small yellow flowers.

MINIATURE, or FAIRY ROSES.

Visitors to the Bath rose shows are familiar with the display of miniature or fairy roses, so artistically arranged at the end of the large tent by the leading nurserymau of that fair city. The varieties are admirably suited for pot culture for decorating the greenhouse and conservatory, or for planting out as edgings of rose beds, &c.

The following six represent the best varieties: They are :-

- 1. Anna Marie de Montravel.—Flowers very diminutive, of the purest white; a perfect "fairy rose," deliciously scented.
- 2. Lawrenciana rubra.—The old double red fairy, free flowering, and very pretty.
 - 3. Mignonette.—Soft rose changing into white, very beautiful.
 - 4. Parqueritte.—Pure white, very continuous and pretty.
- 5. Perle d'Or.—Yellow, with orange centre, flowering in large clusters, novel and distinct.
- 6. The Pet.—Double white, profuse bloomer, one of the prettiest little roses in cultivation.

TREES, SHRUBS, &c.,

SUITABLE FOR PLANTING ON LAWNS, &c.

The following are a few of the many trees and shrubs of graceful habit, beautiful leaves, and bright and chaste flowers, which are suitable for planting on small lawns, alongside carriage drives, paths, and such-like places:—

- 1. Alnus aurea (golden alder), with its elegantly-cut foliage, forms a striking object.
- 2. Arundo conspicua.—Very fine perennial plant, rivalling in appearance the handsome and stately-looking pampas grass. The long, narrow, arching leaves, with, high above them, gracefully drooping silvery plumes, renders it a most ornamental plant (see p. 166).
 - 3. Betula alba pendula Youngii (weeping birch).
 - 4. Cerasus vulgaris flore pleno (double-flowered cherry).
- 5. Cratægus coccinea (scarlet thorn).—Flowers white, followed by a crop of red berries.
- 6. Cupressus Lawsoniana is admirably adapted for planting in conspicuous places, where its bold yet graceful habit and luxuriant foliage can be seen to advantage. It will grow freely in soil of average texture and fertility, providing the drainage is good.
 - 7. Fagus sylvatica pendula (weeping beech).—Very effective.
 - 8. Fraxinus pendula (weeping ash).—A very pretty tree.
- 9. Laburnum vulgaris (common laburnum).—A generally admired European tree, bearing a profusion of drooping racemes of yellow flowers in May.
- 10. Lauris nobilis (sweet bay).—A well-known evergreen, prized for its aromatic leaves of firm texture.
- 11. Negundo fraxinifolium variegatum (syn. acer negundo variegatum).—A beautiful North American shrub, having pinnate and extremely beautiful variegated leaves which are almost white, the spots of pale green sparingly distributed over the surface of the leaves giving a delicate and very pleasing appearance to young trees during the summer and autumn months, either planted singly or intermixed with other trees and shrubs.
 - 12. Rhododendron album triumphans.—Large, white.
 - 13. R. atrosanguinea.—Intense blood-red.
 - 14. R. bianco. Salmon pink, large blotch.
 - 15. R. blandum.—Pale blush.
 - 16. R. blandyanum.—Rosy crimson.

17. R. Mrs. Thomas Agnew.—Pure white, lemon blotch.

18. Taxodium distichum (deciduous cypress) is a beautiful tree of erect and elegant habit, with pale-green, fern-like foliage; requires a moist situation—that is, soil uniformly moist about the roots and resting on a gravelly subsoil.



Fig. 67.
CUPRESSUS LAWSONIANA.

19. Taxus baccata aurea (old golden yew) is of semi-globular and conical form, densely feathered to the ground, veritable bushes and pyramids of gold.

- 20. Thuja occidentalis (American arbor vitæ).—There are several forms of this ornamental shrub, all of which are desirable subjects and of free growth.
- 21. Thujopsis standishii.—An ornamental shrub of an erect, conical habit of growth, densely furnished with slender branches and flat, hatchet-shaped, shining leaves.

Other suitable subjects for the purposes indicated above are the Tree Pæony, Lilac (Syringa), Golden Euonymous (spindle tree), Golden and Variegated-leaved Elder (Sambucus), Flowering Currant (Ribes), red and yellow, Philadelphus (mock orange) grandiflorus and flore pleno, Myrtle—this may be planted in southern and western counties of England and Ireland with every prospect of its surviving ordinary winters—the Japanese maples (acer), Arbutus (strawberry tree), Cercis Siliquastrus (Judas' tree), Golden and Silver-leaved Hollies (Hex); Buddlea globoso, with its calceolaria-like foliage and round, golden orange-coloured flowers, are very effective, either as a bush or trained against a south or west wall or fence; Daphne mezereum, Azalea mollis, Weigela amabilis and W. multiflora, Portugal laurel, and Spiræa ariæfolia.

HARDY WOODY CLIMBERS AND PLANTS SUITABLE FOR SOUTH WALLS.

DECIDUOUS.

- 1. Aloysia citriodora (lemon-scented verbena).—This deserves to be planted at the foot of a south or west wall, putting a few inches deep of coal-ashes about it in winter, and either hanging a mat or placing a little dry fern over the branches as a protection from severe frost.
- 2. Ampelopsis (Virginian creeper) veitchii.—Requires no nailing, foliage handsome and highly coloured in autumn.
- 3. Aristolochia sipho (Dutchman's pipe) has ornamental, heart-shaped foliage and curiously-shaped, tubular, curved flowers of a dull yellow colour streaked with purple. It succeeds best in light soil and a warm situation.
- 4. Bignonia capreolata.—This North American subject does well if given a south aspect, its conjugate leaves and reddish-yellow flowers, produced in June and July, being very telling in effect.
- 5. Clematis alpina.—Flowers in May and June, the flowers being of violet-blue.
- 6. C. flammula is a generally cultivated and hardy variety. It has very pretty pinnate dark-green leaves and pure white, fragrant flowers,

produced in great profusion from July to October. It is admirably adapted for festooning, covering chained devices, &c.

- 7. C. florida.—White flowers, tinged with green.
- 8. C. Jackmani is a popular variety, having large, rich, violet-purple flowers.
- 9. **C. Montana.**—A very hardy and highly ornamental variety, with white flowers of medium size, produced sometimes as early as April.
- 10. Clianthus puniceus (parrot flower).—A very pretty plant with pinnate leaves, and showy, papilionaceous (butterfly-like), searlet flowers in May and June. It requires the protection of a wall or fence having a south or west aspect.
- 11. Jasminum nudicaule produces a profusion of bright yellow flowers from November onwards through the winter.
- 12. J. officinale (common white jasmine).—A very free-growing variety, flowering in July.
 - 13. Lonicera flava has large, yellow, fragrant flowers (honeysuckle).
- 14. L. flexuosa.—A japanese species, with long lanceolate leaves and yellow and pink flowers of great sweetness, appearing in summer.
- 15. L. fragrantissima has small, white, highly odoriferous flowers in February before the leaves appear.
- 16. Passiflora cœrulea.—A most beautiful climber for house fronts in the southern and western counties of England and Ireland. The young shoots should not be stopped, but simply thinned out where likely to get too thick—a circumstance which should be avoided in the culture of all plants.
- 17. Rosa arvensis, owing to its very rapid growth, is suitable for covering trunks of trees, &c., for which purpose many of the clematis are equally adapted.
- 18. R. Banksiæ.—Both the yellow and white varieties are excellent climbers, the flowering shoots depending gracefully from rustic poles, &c., are very effective.
- 19. Solanum crispum.—The wavy leaves and bluish-purple, fragrant flowers of this Chilian subject entitle it to a place in this list, as also does the popular Pyrus (Cydonia) Japonica.

EVERGREENS.

- 20. Akebia quinata.—The smooth palmately-divided leaves and small violet-red flowers appearing in spring give to this an effective appearance. It is only suitable for warm districts.
- 21. Berberidopsis corallina, with its oblong spiny leaves and racemes of drooping crimson flowers, is a desirable and showy plant.

- 22. Choisia ternata (Brazilian orange).—A very desirable evergreen, with daphne-like foliage and clusters of white, sweet-scented flowers, produced in May and June. This charming plant proved itself to be quite hardy during the severe winter of 1890–1, growing against a wall having a south aspect at Longford Castle, Salisbury, and Warwick Castle, Warwick.
- 23. Hedera (ivy).—The gold and silver-edged and blotched varieties are suitable for covering walls and fences on which flowering plants will not succeed.
- 24. Jasminum fruticans.—With glossy, three-leafleted leaves and yellow flowers, produced all through the summer.
- 25. Lonicera (honeysuckle) brachypoda has oval, shining leaves, and pale yellow, sweet-scented flowers.
- 26. Rosa sempervirens.—This evergreen rose has long, hooked prickles, shining leaves, and clustered, fragrant flowers of medium size.

HARDY FERNERIES.

In the vicinity of most gardens and houses, from the stately castle to the humblest cottage, may be found shady and perhaps objectionable nooks, in which flowering or variegated leaved plants will not succeed, that might be rendered interesting and beautiful spots, by the placing thereon somewhat irregularly together old roots, rugged stones, clinkers, &c., raised to the desired height by the addition of light soil, and then planting amongst them hardy ferns of, among others, the following varieties:—

- 1. Allosorus crispus (mountain parsley fern.
- 2. Asplenium Adiantum-nigrum (black maidenhair spleenwort).
- 3. A. trichomanes depauperatum.
- 4. Athyrium Filix-fæmina (lady fern).
- 5. A. F.-f. crispatum.
- 6. A. F.-f. dissectum.
- 7. A. F.-f. Fieldiæ.
- 8. A. F.-f. furcillatum.
- 9. A. F.-f. gracile.
- 10. A. F.-f. multifidum nanum.
- 11. Blechnum spicant (common hard fern).
- 12. B. imbricato-erectum.
- 13. Cystopteris alpina (Alpine bladder feru).
- 14. Lastræa cristata (crested buckler fern).
- 15. L. Filix-mas (male or common buckler fern).
- 16. L. F.-m Daddsii.
- 17. L. F.-m. furcans.

- 18. L F m grandiceps.
- 19. L. polydactyla.
- 20. Osmunda regalis (royal fern).
- 21. Polypodium dryopteris (oak fern).
- 22. P. semilaceum (Irish polypody).
- 23. Polystichum aculeatum (common prickly-shield fern).
- 24. P. angulare (soft prickly-shield fern).
- 25. P. angulare cristato-gracile Jacksonii.
- 26. Scolopendrium angustifrons.
- 27. .S. corrigato-cristatum.
- 28. S. fissum latum.
- 29. S. sagittato-cristatum,
- 30. S. Wardii.

GREENHOUSE, ROOM, AND WINDOW PLANTS.

SPACE will only allow of a few general remarks and a short list of subjects being given under the above heading, but at the same time we shall make them sufficiently long to be useful to those seeking help and information in the matter of growing plants—ordinary, decorative, greenhouse, and window plants—successfully.

Plants of the coleus, echeveria retusa, eupatorium, fuchsia, funkia grandiflora (plantain lily—by division), heliotrope, pelargonium (geranium), petunia (double), &c., may be easily propagated from cuttings treated in the manner described under the heading of "Winter-Flowering Begonias."

Before proceeding further, we may state that a composition of potting soil, consisting of about four parts of light, fibrous, loamy soil, and one of sifted leaf-mould and short manure, with a little coarse or drift sand added, and the whole well mixed before being used, will, unless otherwise stated, be suitable for potting all the under-mentioned plants in. In potting, the soil should be dry enough not to stick to the round and flat sticks used in ramming the soil moderately firm between ball of plants and pots, for which purpose the flat rammer should be used, the round one (about 2 in. in diameter) being employed for ramming the soil on top. To acquire success it is necessary that plants should be provided with good drainage. This is secured by putting a large piece of crock over the hole in the bottom of each pot, with smaller pieces round it, finishing with an inch deep of small crocks to fill in the chinks, and a little moss or a few half-rotted leaves to keep the soil out of the drainage, the depth of which should be a little more or less, according to the size of pot or pan being used. That given above will be depth enough for a 6-in, pot, that is, a pot 6 in. in diameter and a little deeper. The plants enumerated below

are of easy culture and very effective, and if some of them are old-fashioned they are none the worse for that; indeed, the fact of their being still cultivated extensively affords conclusive evidence that they hold their own position against all new-comers. The greenhouse should be kept close, moist, and warm when it is desired to push the plants growing therein into flower, and, having succeeded in doing this, the next important object is to keep them in flower as long as possible. This is to be done by maintaining a somewhat dry and airy atmosphere in the house, and keeping the plants uniformly moist at the roots and free from insect attacks.

The following is our selection:-

ARUM LILY.

(Richardia (calla) æthiopica.)

THE large, white, trumpet-shaped flowers, borne on stout stalks well above the large, luxuriant, green, handsome leaves, impart to this popular plant at once a chaste and imposing appearance. Being a semi-aquatic subject, it requires copious supplies of water at the roots during the growing season; alternate waterings

of weak liquid-manure, or light surface-dressings of any of the plant manure advertised, immediately before applying water, should be given from the time the plants have filled the pots with their large fleshy roots until they have gone out of flower. The best way to grow these and many other plants, including spiræas, salvias, bouvardias, eupatoriums, and solaniums, is to plant them out either in excavated holes or trenches, filled with prepared soil, towards the end of May or early in June, pressing the soil about the roots in planting and



hollowing it out a little about the stems for the reception of water, and tying the leaves to a stake to prevent them being injured by the wind. These leaves, however, will die down a few weeks later, but not before young ones have sprung up from the roots to replace them. In the absence of rain, frequeut applications of water at the roots will be necessary to the attainment of success in flowering the plants in due time. Towards the end of August ring the plants round with a spade, keeping the same distance from the stem as the size of the pots into which each plant operated on is intended to be

potted a couple of weeks later. This, with the obvious purpose of severing all straggling roots within the circumscribed space, thereby causing a host of small ones—"feeders"—to push forth from the point of severance, will prevent the plants experiencing any material check in being potted up. When this is done the plants should be stood in the shade for a few days to re-establish themselves, after which they may be stood in the sun until the approach of frost, when they should be housed. The soil may now, with advantage, be kept a little dry about the roots. This temporary rest or check of growth will cause them to throw up their flower spikes earlier and to flower better than would otherwise be the case. The plants must not be crowded, and should be kept, like all other plants being cultivated, free from aphis. When planting out, the plants may be divided into as many pieces as there are bulbs with leaves attached, and the divisions transplanted in manner described above, if necessary, to increase the stock.

BALSAM.

(Impatiens balsamina.)

This is a very showy and beautiful half-hardy annual. The flowers are large, of fine substance, and beautifully striped and spotted. Sow in March, and again in April and May for succession, covering the seed with fine soil, water, and place the pot or pan in a hot-bed, or on a shelf where the hot-bed accommodation does not exist, covering with a square of glass and a little moss to exclude light and air-circumstances which tend to the speedy germination of the seed-removing this, however, as soon as the young plants appear. These, as soon as large enough to handle, should be pricked out 2 in. apart in a shallow box, returned to the frame or shelf, watered, and shaded from bright snn for a few hours during the heat of the day, keeping close until the roots have taken to the soil, when the shading should be discontinued. As soon as the plants have made some growth, and before they touch each other, pot them singly into 3-in, pots, return to the house, and treat as before, afterwards shifting them into $4\frac{1}{2}$ -in. pots, in which size, unless large plants are desired, they may be allowed to flower. Keep the flowers picked off for a few weeks, to enable the plants to branch. admitting plenty of fresh air on favourable occasions to ensure a sturdy growth. The plants should be damped overhead with the syringe on bright afternoons at closing time before they come into flower, to keep them clean as much as to promote growth. As the pots become filled with healthy roots the necessity for more frequent supplies of water thereat will increase accordingly.

TUBEROUS-ROOTED BEGONIA.

(Begonia tuberosa.)

This is at once a charming, highly useful, and very effective greenhouse and conservatory and window plant. Moreover, it is, without doubt, the most effective bedding-out plant we have when a carpeting of the silver sedum (stonecrop) is planted underneath to prevent the chaste, soft, and bright-coloured flowers being splashed by heavy rains. seed is very small, and should therefore be sown in very fine soil, made quite firm and watered about half an hour before sowing. pan either in a warm frame or house, placing a piece of glass and a little moss over it, and afterwards treat as recommended for balsams in every detail. When the plants are gone out of flower in the autumn they may be stored away under the staging in a cool cellar, or any place out of the reach of frost, withholding water from the roots to allow of the foliage dying down naturally, and the tubers going to rest (see "Storing Bulbs," &c., pp. 222-3). The seed may be sown any time from January to March, but the sooner the plants are raised for flowering the same year the better. Of course the plants do better the second and third years. The tuberous-rooted begonias may also be propagated from cuttings taken off the seedling plants the same or following years, selecting only the finest and best type of flowers and distinct and pleasing shades of colour to propagate from, weeding out small and indifferent forms and colours.

WINTER-FLOWERING BEGONIA.

This, like the tuberous-rooted variety, is of very easy culture. It is propagated from cuttings, which are best put in every spring, choosing stout, short-jointed shoots, which have been well exposed to the light. as these make the best plants; cuttings about 3 in. long are preferable to longer oues. Remove the lower pair of leaves with a sharp knife, and then insert them round the edge of 3-in. or 4\frac{1}{3}-in. pots. duly crocked. and filled with light, sandy soil, made firm, water and place in a hotbed or under a hand-light in greenhouse. When rooted, pot off singly into 3-in. pots, giving water to settle the soil. When they make a fresh growth pinch out the points of the leading shoots to induce a bushy growth, afterwards shifting the plants as required into $4\frac{1}{9}$ -in, and 6 in. pots, retaining a few of the less robust-growing plants in the 3-in. pots, which will be found very serviceable for standing in the front part of staging, &c. The old plants may be thrown away after the cuttings have been taken in the spring, if the space occupied by them should be required for other plants.

The following are free winter-flowering varieties of the begouia:—Glorie de Lorraine (one of the best); Carminata, Chelsoni, Fuchsioides, very showy, and suitable for covering a wall or other space from 3 to 10 ft. high; Parvifolia, Prestoniensis, Insignis, and Welloniensis. To these might be added several varieties of the fine ornamental-leaved begonia, such as Comte de Limminghe, Helen Uhder, Princess Charlotte, Prince Waltonstein, the young leaves of the last-named variety being of a rich, velvety crimson, with white flowers shaded with pink; Rex, Victor, and Lemoine.

CALCEOLARIA (Herbaceous).

It would be difficult to find more attractive subjects than well-grown and well-flowered herbaceous calceolarias of a good strain, the colours of the purse-like flowers ranging from creamy white to the most dazzling crimson, both self-coloured and spotted. The seed may be sown in the manner described for tuberons-rooted begonias, but should be sown in July instead of spring, placing the pan in a hand-light or frame having a north aspect; a hand-light is preferable as it could be covered with a mat day and night until the seedlings appear, when shading in the afternoons of bright days need only be resorted to. When large enough to handle the young plants should be pricked out in pans or shallow boxes in light, rich soil, giving a space of about 2 in, between the individual plants, watering through a fine rose, putting them in a frame near to the glass, keeping close and moist, and the seedlings shaded from bright sun. Afterwards treat as recommended for begonias, keeping the frame close and the atmosphere moist for a few days each time the plants are shifted into larger pots, damping them gently overhead on bright afternoons from the syringe or rosed watering-can, to freshen them up and induce the plants to push their roots into the new soil; after which they should have plenty of air on all favourable occasions, avoiding draughts, bearing in mind that more failures in the culture of this gorgeously-coloured flower are to be traced to "coddling" them than to any other cause, and that in winter a temperature ranging between 40° and 50°, according as the weather is cold or mild, will suit them admirably. Large thick leaves covered with dew in the mornings during the autumn and winter months are most desirable, and such satisfactory conditions are only to be obtained by growing the plants near to the glass, standing the pots on sifted coal-ashes, in cool pits or frames, the coal-ashes being kept uniformly moist will contribute the necessary atmospheric moisture; water at the roots should be applied with great discrimination. When the soil becomes fairly dry on the surface, give sufficient water to moisten the whole down to the drainage, allowing it to get in the same condition hefore repeating the application.

Insect Attacks.—Calceolarias, lika arum lilies, cinerarias, and many other plants, are subject to the attacks of aphis, often brought about by an insufficiency of fresh air circulating in the house, as well as an insufficiency of water at the roots and overhead. When the plants are thus affected, fumigate in the evening with "XL ALL" vaporising compound, ventilating the house rather freely the following day. This is more effective in ridding the plants of the fly than tobacco fumes, and it leaves no unpleasant odour in the house so fumigated the following morning.

CELOSIA PYRAMIDALIS.

This is a very useful and highly decorative tender annual, cultivated only in pots for embellishing greenhouses and rooms during June, July, and three following months, the plumes or feathers of crimson, magenta, and golden yellow being very ornamental. The plants may be grown and flowered in pots ranging in size from 3 in. to 6 in. in diameter. The same treatment detailed under the heading of "Cockscome" will be congenial to the requirements of the celosia.

CHINESE PRIMROSE.

(Primula sinensis.)

This popular flower has been greatly improved in recent years, and it continues to increase in value as a winter and spring-flowering plant for the decoration of greenhouses, rooms, and windows. Well-grown primulas are admirably adapted for standing in vases on tables, &c. Sow the seed the same time recommended for cinerarias, and afterwards treat the plants in every stage of growth in the manner detailed under that heading, with this difference, the first spikes of flowers that the primulas produce should be pinched off, to throw strength into the plants.

CHRYSANTHEMUMS.

THESE plants coming into flower at a time of year when flowers of every other description are scarce, namely, from the end of October to December, and onwards by subjecting the plants to special treatment, tends greatly to enhance their value as desirable subjects for embellishing greenhouses, &c. during the dull winter months. The best time to put in cuttings is from the middle of December to the middle of

January, any time that good sturdy cuttings from 2 to 4 in. long can be obtained, either before or during the period indicated.

Propagation.—This may be effected by securing stout healthy suckers of the dimensions described above, namely, shoots that push through the soil with roots attached, and by taking off cuttings with a "heel," that is, with a thin slice of old wood adhering, and also by cuttings taken in the ordinary way, removing the bottom leaf and cutting the stem square across below that joint with a sharp knife. Insert the cuttings singly in 2½-in. pots filled with rich, sandy soil, stand closely together on sifted coal-ashes near the glass in a frame placed on an old hot-bed, water, and shade to prevent flagging, and keep the frame close until the plants have taken root, when they should be given more room and air to promote and maintain a sturdy growth during the winter months, and, indeed, up to the flowering period. Where the hot-bed accommodation is not at hand, a hand-light may be used to strike the cuttings under; or failing this hand-light convenience, a narrow box, say 9 in. wide, 24 in. long, and 5 or 6 in. deep, with a little sawdust placed in it, may be made good use of by plunging the pots in the sawdust, covering them with a square of glass of the right size, and placing the box on a shelf in the greenhouse or window-sill. The plants must be kept moist at the roots in every stage of growth, applying surface-dressings of plant manure or liquid-manure liberally from the time the flower buds appear until they are pretty well developed, when supplies of clear water will suffice.

Shifting the Plants into larger Pots.—The purpose for which the plants are intended must in a great measure determine the size pots into which the plants are to be finally shifted for flowering in. They should, however, be shifted into the intermediate sizes before the roots become matted round the soil—root-bound. The strongest plants should be potted first, shifting out of 2-in. or 3-in. into 4½-in., and again into 6-in., and out of these into 9-in., retaining a small percentage of the plants—the weaker ones—in the 6-in. for the decoration of windows, &c., making the soil firm in potting and leaving at least l in space in each pot for the reception of water. Keep the points pinched out of the young shoots from the beginning up to the end of June, or the second week in July at the latest, so as to secure dwarf, bushy plants. Of course, if pyramids and standards are desired, a different line of treatment in the matter of topping the plants must be pursued. The same remark applies to the growing of plants to produce from one to three large blooms each, but space will not permit of my giving details on those points here.

Disbudding.—In order to obtain decent-sized blooms on the plants, the flower buds should be thinned out pretty freely, leaving, as a rule,

only one—the "crown" or "central"—flower hud to develop ou each shoot.

Miniature Plants with large Blooms .-- To the uninitiated it seems marvellous how chrysanthemum plants from 9 in. to 12 in. high, growing in 3-in, pots, can be made to produce one bloom each, ranging in size from 3 in to 5 in in diameter. This is how it is done: during the month of August take cuttings, about 4 in, long, off plants which had not been stopped during the two previous months, and dibble them singly into 3-in, pots filled with sandy soil, pressing this about them in putting them in, watering to settle the soil about the cuttings, and then plunge the pots in a gentle hot-bed near the glass, being careful to shade them from the sun and to damp them gently overhead on the afternoons of fine days after the shading is removed, to be replaced the following morning. Thus treated, in addition to keeping the frame pretty close, rooted plants will be obtained in about a month from the time the cuttings were inserted. More air should now be given, gradually increasing the amount admitted until the plants will bear exposure without flagging. A shelf near to the glass in an airy greenhouse or pit will suit the plants best at this stage of their growth. If larger blooms are desired, a few of the strongest plants may be shifted into pots a size larger. These miniature plants are admirably adapted for window decoration, rooms, and for standing on the edge of staging, &c. Mildew and green fly are the most troublesome diseases to which chrysanthemum plants of the description being treated of are subject. The remedy for mildew is the application of flowers of sulphur to the affected leaves while damp, and to remove green fly (aphis)-if clear water applied through the syringe fail to dislodge them-dust the points of the shoots (usually attacked by the aphis) with tobacco powder, and syringe the following day with sufficient force to cleanse the plants from both fly and powder. To any readers of "MY GARDENER" who may require further information on the cultivation of this popular winter-flowering plant I would recommend "Chrysanthemums and THEIR CULTURE," by Mr. E. Molyneux.

The following brief lists of decorative varieties will be found sufficient in every way for this work. They are:—

DECORATIVE VARIETIES.

- 1. Bouquet Fait.
- 2. Cullingfordi.
- 3. Flambeau.
- 4. Flocon de Niege.
- 5. George Glenny.
- 6. King of Crimsons.

- 7. Lady Selborne.
- 8. La Nymph.
- 9. Mrs. Dixon.
- 10. Progne.
- 11. Simon Delaux.
- 12. Triomphe du Nord.

Pompons.

	13.	· B	lack	Douglas	
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- 14. Cendrillon
- 15. Eléonore.
- 16. Golden Madame Marthe.
- 17. Lizzie Holmes.
- 18. Madame Marthe.

- 19. Marahont.
- 20. Nellie Rainford.
- 21. President.
- 22. Prince of Orange.
- 23. Reine d'Or.
- 24. Rosinante.

ANEMONE POMPONS.

- 25. Madame Montels.
- 26. Marguerite de Coi.
- 27. Marie Stuart.

- 28. Mr. Astie.
- 29. Perle.
- 30. Queen of Anemones.

The white and yellow marguerites, as well as the pretty blue marguerite (Agathæa celestis), may be grown in the same way as the ordinary chrysanthemum described above, so the method of procedure need not be detailed here.

CINERARIA.

(Senecio cruentus.)

HEALTHY, well-grown plants of the cineraria are very effective decorative subjects. They are indispensable for the embellishment of greenhouse and conservatory, rooms, windows, &c. They are, moreover, of very easy culture, Obtain seed of a good strain of large, well-formed, and richly coloured flowers, and sow in properly drained pans filled with light, sandy soil, made firm, in March, and again in April and May for succession; cover lightly with fine soil, water, and place in a close warm frame or house, putting a piece of glass and a little moss over the pans, as recommended in the case of tuberous-rooted begonias, and afterwards treating the seedling plants, in the matter of pricking out, potting, &c., in the manner detailed under that heading, except with this difference, that the cineraria plants should be grown on in shallow frames having a north aspect during the months of June, July, and early part of August, shading during the afternoons of bright, sunny days, the pots or boxes being stood on sifted coal-ashes, kept damp, with a few lettuce leaves distributed therein as traps for slugs, which, if not looked after in time, would eat holes in the leaves of the plants and spoil them. From the time the plants are potted into $2\frac{1}{3}$ -in, or 3-in, pots, until finally placed in their flowering ones, they should be shifted into the larger ones before they become matted at the roots. Some of the best plants may be shifted out of 6-in. into 8-in. pots as their flowering size, but most of the plants may be flowered in the 6-in. size, and a

few of the last sowing, in 4½-in. ones. In the middle of August the plants should be transferred to a frame or pit having a south aspect, shading for a few hours—say from 11 to 2 o'clock—on hot days, drawing the sashes off the plants at night, weather permitting, for a few weeks. The cineraria will flourish in the same temperature as that recommended for calceolarias, but the plants are more susceptible to injury from frost than they are. Frost and excessive moisture in the atmosphere are to be guarded against in the culture of the cineraria. A low (50° to 55°), but not excessively moist, atmosphere is eongenial to the requirements of the plants. If they are kept in a uniformly low and moist atmosphere during September and three following months, they are sure to become a prey to the attacks of mildew, to which disease they are subject whilst in full growth. Should this appear, dust the affected leaves whilst damp with flowers of sulphur, and endeavour to maintain a drier and more airy atmosphere than that previously observed. While the eineraria likes plenty of fresh air during favourable weather, experience also goes to show that it dislikes draughts. Great eare must at all times be exercised in the matter of giving water at the roots.

COCKSCOMB.

DWARF, sturdy plants, with combs 7 in. to 9 in. long and 4 or 5 in. deep, are sometimes met with at shows, and, as good examples of one of Nature's many curious productions, are admired accordingly. To obtain plants of the dimensions indicated, it is necessary to grow the plants on from the seedling state in a brisk, moist heat, giving plenty of water at the roots, keeping the foliage free from the attacks of red spider, and admitting sufficient fresh air to the frame or pit to ensure sturdily-grown plants. The observance of the above cultural details. in addition to growing the plants in a position near to the glass, and giving alternate waterings of clear water and liquid manure at the roots after the latter have taken well to the soil is necessary to secure plants of the dimensions indicated. Occasionally surface-dressingssay two or three times a week-of plant-manure, immediately before applying clear water at the roots, will benefit the plants quite as much as the liquid-manure, and its use is less objectionable in a greenhouse. The seed may be sown any time in February or March in the manner detailed for cineraria.

CYCLAMEN.

(Cyclamen persicum.)

This is a very charming and effective winter and spring-flowering plant. Sow the seed in July in well-drained pans filled with light, rich,

sifted soil, covering with a little of the same, and afterwards treat as recommended for cockscombs, keeping the plants growing from the seedling state until they have done flowering, shifting into larger pots as the roots push through the soil, until placed in their flowering sizes —4½-in. and 6-in. pots. When gone out of flower the plants should be rested for two or three months by placing them in a cool frame and partly withholding water from the roots, that is, by allowing the soil to get pretty dry before applying water. After this interval of rest the soil should be shook off the roots, and then be re-potted in clean, properly crocked pots, using a mixture consisting of three-parts good fibrous loam and one of sweet leaf-soil (free from worms) and pulverised cow manure, with a good dash of white sand (drift sand will answer quite as well if more easily obtained) added, the whole being well mixed before being used.

GLOXINIAS.

(Gloxinia speciosa.)

There are very few summer-flowering plants to equal the gloxinia from a decorative point of view. The dwarf, sturdy, compact habit of the plant, consisting of a profusion of cval-shaped, green, fleshy leaves, ranging from 5 to 9 in. in length, and large tubular or trumpet-shaped flowers of rich and various colours, borne on stout stalks well above the handsome leaves. The seed of this showy and desirable bulbous plant should be sown in February, and afterwards be given the same kind of treatment detailed for cyclamens. The gloxinia may also be propagated from the leaves; choosing those of good varieties, and inserting the ends a couple of inches in $4\frac{1}{2}$ -in. pots, filled with sandy soil, watered, and placed in warmth, they soon form tubers at their bases.

LILIUMS.

These include many beautiful species, among which may be mentioned Auratum (the golden-rayed lily of Japan), Candidum (common white garden lily), and Harrisii (the Bermuda or Easter lily, see Fig. 68).

Belladonna Lily (Amaryllis belladonna).—The flowers of this effective, very useful, and easily grown bulbous plant are white, flushed and tipped with deep rose. The plants should be intermixed with fern or other foliage plants, above which the bare spikes of flowers would show to advantage.

Guernsey Lily (Nerine sarniensis).—This is also an easily managed subject, producing flowers of a brilliant crimson-scarlet, which have a dazzling effect when seen in the sun's rays.

For pot culture use fibrous loam, leaf-mould, rotten manure (free from worms), and sand in about equal parts and in a rough state. In potting leave the top of the bulb exposed, and a space of about 2 infrom the rim of the pots for top-dressing the plants in due time,



LILIUM AURATUM.

namely, after they have made growth, forming a mass of roots at its base on the surface of the soil. When potted the pots should be covered in the manner recommended for lily of the valley, &c. All lilies require being kept uniformly moist while growing, and being kept free from blight, &c.

LILY OF THE VALLEY.

(Convallaria majalis alba.)

THE spikes of pearly white, well-shaped, and deliciously fragrant flowers, thrown well above the fresh green oval-shaped leaves, have for a long period rendered supplies of this very popular flower most welcome whenever attainable. Imported "crowns" and "clumps" are the best for pot culture and for early forcing. These should be potted up as soon as they can be obtained after the foliage has died down naturally, towards the end of October or early in November, according to the cold or mild weather prevailing at the time. If single crowns are used, pack twenty or thirty closely together in $4\frac{1}{2}$ -in or 6-in. pots, leaving the points of the crowns just showing above the soil in potting; clumps consist of twenty to thirty crowns growing together in one piece or clump, suitable for squeezing into $4\frac{1}{2}$ -in. and 6-in. pots. When potted, water

to settle the soil about the roots, stand the pots on coal-ashes in a frame or cold pit, and cover with 3 or 4 in. deep of sifted leaf-mould, or coal-ashes, or sawdust, to exclude light and air. If the frame or pit accommodations are not at command, stand the pots closely together on



Fig. 70.

ashes outside in a situation where water is not likely to accumulate, and cover them in the manner indicated. In December a few of the plants should be introduced into heat, plunging the pots to the rim in a brisk bottom heat, placing an inverted flower-pot of the same size over each pot of lilies, and stopping the hole in the bottom to keep out light and air until the flower spikes appear, when the stopping should be removed, and the plants should then be treated in the manner advised for hyacinths, tulips, &c., in the same stages of growth. A box deep enough to admit of a few pots being buried therein in sawdust, leaf-mould, or ashes, and placed under the stage in greenhouse (a warmer house or pit will bring the plants into flower quicker), cellar, and such-like place, may be used with advantage to forward the flowering of lilies, hyacinths, spiræas (S. astilbe barbata), &c.

WINDOW BOXES.

Window boxes should be especially made to fit the sills of individual windows, heing made wider at the top than the bottom and sloping slightly outward, and about 6 to 8 in. deep, according to length and These should be painted three coats, finishing with a good green colour. They should have a few 1-in, holes—say eight—bored zigzag in the bottom, these being covered with between 1 and 2 in. deep of crocks, the smallest ones being placed on the top for drainage. For affording a spring floral display these may be filled with dark and vellow-flowered wall-flowers, crocuses, snowdrops, hyacinths, violets, with blue forget-me-nots or aubrictia deltoides grandiflora as an edging: these giving place to such plants as scarlet, pink, and white pelargoniums, salvia patens (a charming blue of erect growth), yellow calceolaria, heliotrope, mignonette, with blue lobelia hanging over the edges, will afford a good summer and autumn display of harmonising colours, coupled with the always acceptable odours of the mignonette, or fragrant weed of Shakespeare, and heliotrope.

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